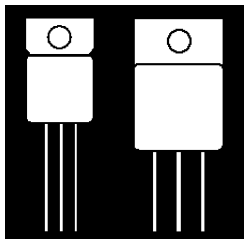


# LOW VOLTAGE, LOW $R_{DS(on)}$ POWER MOSFETS IN HERMETIC ISOLATED PACKAGE



**50V And 60V Ultra Low  $R_{DS(on)}$   
Power MOSFETs In TO-257 And TO-254  
Isolated Packages**

## FEATURES

- Isolated Hermetic Metal Packages
- Ultra Low  $R_{DS(on)}$
- Low Conductive Loss/Low Gate Charge
- Available Screened To MIL-S-19500, TX, TXV And S Levels
- Ceramic Feedthroughs Available

## DESCRIPTION

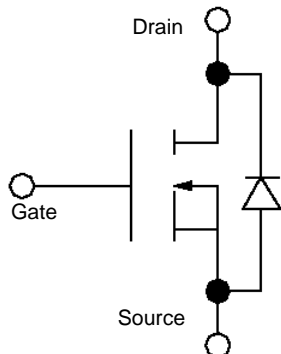
This series of hermetic packaged MOSFETs are ideally suited for low voltage applications; battery powered voltage power supplies, motor controls, dc to dc converters and synchronous rectification. The low conduction loss allows smaller heat sinking and the low gate charge simpler drive circuitry.

## MAXIMUM RATINGS (Per Device)

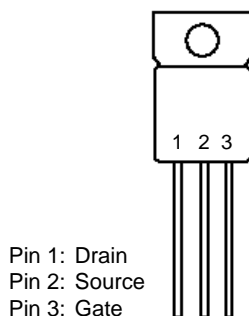
PART NO.	$V_{DS}$ (V)	$R_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)	Package
OM60N06SA	60	.025	60	TO-254AA
OM50N06SA	60	.030	50	TO-254AA
OM50N06ST	60	.035	50	TO-257AA
OM60N05SA	50	.025	60	TO-254AA
OM50N05SA	50	.030	50	TO-254AA
OM50N05ST	50	.035	50	TO-257AA

3.1

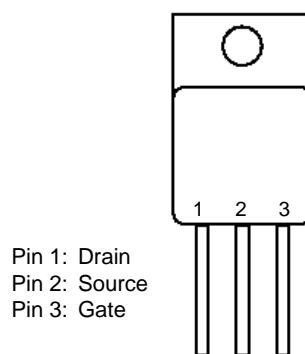
### SCHEMATIC



### T-3 PIN CONNECTION



### M-PAK PIN CONNECTION



# OM60N06SA - OM50N05ST

## ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted)

Parameter	60N06SA	50N06ST 50N05SA	60N05SA	50N05ST 50N05SA	Units	
V <sub>DS</sub>	Drain-Source Voltage	60	60	50	50	V
V <sub>DGR</sub>	Drain-Gate Voltage (R <sub>GS</sub> = 1 MΩ)	60	60	50	50	V
V <sub>GS</sub>	Gate-Source Voltage, Continuous	±20	±20	±20	±20	V
I <sub>D</sub> @ T <sub>C</sub> = 25°C	Continuous Drain Current <sup>2</sup>	55	50	55	50	A
I <sub>D</sub> @ T <sub>C</sub> = 100°C	Continuous Drain Current <sup>2</sup>	37	33	37	33	A
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	220	200	220	200	A
P <sub>D</sub> @ T <sub>C</sub> = 25°C	Maximum Power Dissipation	100	100	100	100	W
P <sub>D</sub> @ T <sub>C</sub> = 100°C	Maximum Power Dissipation	40	40	40	40	W
Junction-To-Case	Linear Derating Factor <sup>1</sup>	.80	.80	.80	.80	W/°C
T <sub>J</sub>	Operating and	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C
T <sub>stg</sub>	Storage Temperature Range					
Lead Temperature (1/16" from case for 10 secs.)		300	300	300	300	°C

1 Pulse Test: Pulse width ≤ 300 μsec. Duty Cycle ≤ 1.5%.  
 2 Package Limited SA I<sub>b</sub> = 25 A, SC SC I<sub>b</sub> = 35 A @ 25°C

## THERMAL RESISTANCE

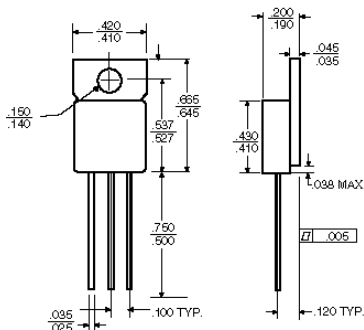
R <sub>thJC</sub> Junction-to-Case	1.25	°C/W
------------------------------------	------	------

## PACKAGE LIMITATIONS

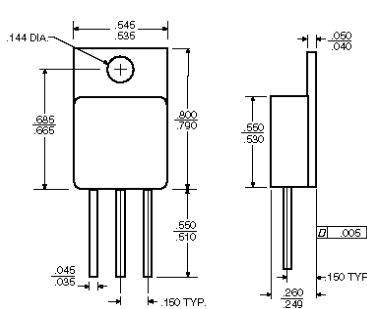
Parameters	TO254AA	TO-257AA	Unit
I <sub>D</sub> Continuous Drain Current	25	15	A
Linear Derating Factor, Junction-to-Ambient	.020	.015	W/°C
R <sub>thJA</sub> Thermal Resistance, Junction-to-Ambient (Free Air Operation)	50	65	°C/W
Linear Derating, Junction-to-Case	0.8	0.8	W/°C

### 3.1

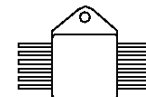
#### T-3 MECHANICAL OUTLINE



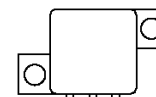
#### M-PAK MECHANICAL OUTLINE



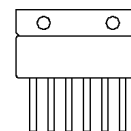
## PACKAGE OPTIONS



MOD PAK



Z-TAB



6 PIN SIP

#### Notes:

- Standard Products are supplied with glass feedthroughs. For ceramic feedthroughs, add the letter "C" to the part number. Example - OMXXXXCSA.
- MOSFETs are also available in Z-Pak, dual and quad pak styles. Please call the factory for more information.



OM50N06SA (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AS</sub> Avalanche Current			50	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			400	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>AS</sub> , V <sub>DS</sub> = 25 V)
E <sub>RR</sub> Repetitive Avalanche Energy			100	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>AR</sub> Avalanche Current			30	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DRSS</sub> Drain-Source Breakdown Voltage	60			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>SS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)			250 1000	μA	V <sub>DS</sub> = Max. Rat. V <sub>GS</sub> = Max. Rat. x 0.8, T <sub>C</sub> = 125°C
I <sub>SSS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)			±100	nA	V <sub>DS</sub> = ±20V
<b>Electrical Characteristics - ON*</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage		2	4	V	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance			.028 .086	Ω	V <sub>GS</sub> = 10V, I <sub>B</sub> = 25 A T <sub>C</sub> = 100°C
I <sub>DM(on)</sub> On-State Drain Current			50	A	V <sub>GS</sub> > I <sub>DM(on)</sub> × R <sub>DS(on)</sub> , V <sub>GS</sub> = 10V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance		17		S	V <sub>GS</sub> > I <sub>DM(on)</sub> × R <sub>DS(on)</sub> , I <sub>B</sub> = 25 A
C <sub>iss</sub> Input Capacitance			2000	pF	V <sub>DS</sub> = 25V
C <sub>oss</sub> Output Capacitance			1000	pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance			300	pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>turn</sub> Turn-On Time			45	nS	V <sub>DS</sub> = 25V, I <sub>B</sub> = 29 A
t <sub>r</sub> Rise Time			90	nS	R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10V
(di/dt) <sub>on</sub> Turn-On Current Slope			200	A/μS	V <sub>DS</sub> = 40V, I <sub>B</sub> = 50 A
Q <sub>g</sub> Total Gate Charge			45	nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10V V <sub>DS</sub> = 40V, I <sub>B</sub> = 50 A, V <sub>GS</sub> = 10V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>turn</sub> Turn-Off Time			160	nS	V <sub>DS</sub> = 40V, I <sub>B</sub> = 50 A
t <sub>f</sub> Fall Time			90	nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10V
t <sub>cross</sub> Cross-Over Time			250	nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			50	A	
I <sub>SDM</sub> Source Drain Current (pulsed)			200	A	I <sub>SD</sub> = 50 A, V <sub>GS</sub> = 0
V <sub>SD</sub> Forward On Voltage			2	V	I <sub>SD</sub> = 50 A, di/dt = 100 A/μs
t <sub>r</sub> Reverse Recovery Time			150	nS	V <sub>R</sub> = 30 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			0.2	μC	
I <sub>FRM</sub> Reverse Recovery Current			4	A	

\*Pulsed: Pulse Duration ≤ 300 μs, Duty Cycle ≤ 1.5%.

OM60N06SA (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AS</sub> Avalanche Current			55	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			520	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>AS</sub> , V <sub>DS</sub> = 25 V)
E <sub>RR</sub> Repetitive Avalanche Energy			130	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>AR</sub> Avalanche Current			34	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DRSS</sub> Drain-Source Breakdown Voltage	60			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>SS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)			250 1000	μA	V <sub>DS</sub> = Max. Rat. V <sub>GS</sub> = Max. Rat. x 0.8, T <sub>C</sub> = 125°C
I <sub>SSS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)			±100	nA	V <sub>DS</sub> = ±20V
<b>Electrical Characteristics - ON*</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage		2	4	V	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance			.025 .060	Ω	V <sub>GS</sub> = 10V, I <sub>B</sub> = 30 A T <sub>C</sub> = 100°C
I <sub>DM(on)</sub> On-State Drain Current			55	A	V <sub>GS</sub> > I <sub>DM(on)</sub> × R <sub>DS(on)</sub> , V <sub>GS</sub> = 10V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance		16		S	V <sub>GS</sub> > I <sub>DM(on)</sub> × R <sub>DS(on)</sub> , I <sub>B</sub> = 30 A
C <sub>iss</sub> Input Capacitance			2500	pF	V <sub>DS</sub> = 25V
C <sub>oss</sub> Output Capacitance			960	pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance			250	pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>turn</sub> Turn-On Time			110	nS	V <sub>DS</sub> = 25V, I <sub>B</sub> = 55 A
t <sub>r</sub> Rise Time			300	nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10V
(di/dt) <sub>on</sub> Turn-On Current Slope			160	A/μS	V <sub>DS</sub> = 40V, I <sub>B</sub> = 55 A
Q <sub>g</sub> Total Gate Charge			65	nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10V V <sub>DS</sub> = 25V, I <sub>B</sub> = 30 A, V <sub>GS</sub> = 10V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>turn</sub> Turn-Off Time			160	nS	V <sub>DS</sub> = 40V, I <sub>B</sub> = 55 A
t <sub>f</sub> Fall Time			160	nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10V
t <sub>cross</sub> Cross-Over Time			320	nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			55	A	
I <sub>SDM</sub> Source Drain Current (pulsed)			200	A	I <sub>SD</sub> = 55 A, V <sub>GS</sub> = 0
V <sub>SD</sub> Forward On Voltage			1.6	V	I <sub>SD</sub> = 55 A, di/dt = 100 A/μs
t <sub>r</sub> Reverse Recovery Time			100	nS	V <sub>R</sub> = 25 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			.25	μC	
I <sub>FRM</sub> Reverse Recovery Current			5	A	

\*Pulsed: Pulse Duration ≤ 300 μs, Duty Cycle ≤ 1.5%.



OM50N06ST (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AV</sub> Avalanche Current			50	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			400	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>SM</sub> , V <sub>DS</sub> = 25 V)
E <sub>REP</sub> Repetitive Avalanche Energy			100	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>VP</sub> Avalanche Current			30	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DS(ON)</sub> Drain-Source Breakdown Voltage	60			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>SS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)		250		μA	V <sub>DS</sub> = Max Flat
I <sub>SS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)		1000		μA	V <sub>DS</sub> = Max Flat x 0.8, T <sub>C</sub> = 125°C
I <sub>SS</sub> Current (V <sub>GS</sub> = 0)		±100		nA	V <sub>DS</sub> = ±20 V
<b>Electrical Characteristics - ON</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage	2		4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance		.033		Ω	V <sub>GS</sub> = 10 V, I <sub>B</sub> = 25 A
I <sub>DM</sub> On State Drain Current	50			A	V <sub>GS</sub> > I <sub>DM</sub> × R <sub>DS(on)</sub> , V <sub>DS</sub> = 10 V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance	17			S	V <sub>GS</sub> > I <sub>DM</sub> × R <sub>DS(on)</sub> , I <sub>B</sub> = 25 A
C <sub>iss</sub> Input Capacitance		2000		pF	V <sub>GS</sub> = 25 V
C <sub>oss</sub> Output Capacitance		1000		pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance		300		pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>don</sub> Turn-On Time		45		nS	V <sub>DS</sub> = 25 V, I <sub>B</sub> = 25 A
t <sub>r</sub> Rise Time		90		nS	R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10 V
(di/dt) <sub>on</sub> Turn-On Current Slope		200		A/μS	V <sub>DS</sub> = 40 V, I <sub>B</sub> = 50 A
Q <sub>g</sub> Total Gate Charge		45		nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>off</sub> Off Voltage Rise Time		160		nS	V <sub>DS</sub> = 40 V, I <sub>B</sub> = 50 A
t <sub>f</sub> Fall Time		90		nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
t <sub>cross</sub> Cross-Over Time		250		nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			50	A	I <sub>SP</sub> = 50 A, V <sub>GS</sub> = 0
I <sub>SM</sub> Source Drain Current (pulsed)			200	A	
V <sub>SD</sub> Forward On Voltage			2	V	I <sub>SD</sub> = 50 A, di/dt = 100 A/μs
t <sub>r</sub> Reverse Recovery Time			150	nS	V <sub>R</sub> = 30 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			0.2	μC	
I <sub>FRM</sub> Reverse Recovery Current			4	A	

\*Pulsed: Pulse Duration ≤ 300μS, Duty Cycle ≤ 1.5%.

OM60N06SA (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AV</sub> Avalanche Current			55	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			520	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>SM</sub> , V <sub>DS</sub> = 25 V)
E <sub>REP</sub> Repetitive Avalanche Energy			130	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>VP</sub> Avalanche Current			34	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DS(ON)</sub> Drain-Source Breakdown Voltage	50			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>SS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)		250		μA	V <sub>DS</sub> = Max Flat
I <sub>SS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)		1000		μA	V <sub>DS</sub> = Max Flat x 0.8, T <sub>C</sub> = 125°C
I <sub>SS</sub> Current (V <sub>GS</sub> = 0)		±100		nA	V <sub>DS</sub> = ±20 V
<b>Electrical Characteristics - ON</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage	2		4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance		.025		Ω	V <sub>GS</sub> = 10 V, I <sub>B</sub> = 30 A
I <sub>DM</sub> On State Drain Current	55			A	V <sub>GS</sub> > I <sub>DM</sub> × R <sub>DS(on)</sub> , V <sub>DS</sub> = 10 V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance	16			S	V <sub>GS</sub> > I <sub>DM</sub> × R <sub>DS(on)</sub> , I <sub>B</sub> = 30 A
C <sub>iss</sub> Input Capacitance		2500		pF	V <sub>GS</sub> = 25 V
C <sub>oss</sub> Output Capacitance		950		pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance		250		pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>don</sub> Turn-On Time		110		nS	V <sub>DS</sub> = 25 V, I <sub>B</sub> = 55 A
t <sub>r</sub> Rise Time		300		nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
(di/dt) <sub>on</sub> Turn-On Current Slope		160		A/μS	V <sub>DS</sub> = 40 V, I <sub>B</sub> = 55 A
Q <sub>g</sub> Total Gate Charge		65		nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>off</sub> Off Voltage Rise Time		160		nS	V <sub>DS</sub> = 40 V, I <sub>B</sub> = 55 A
t <sub>f</sub> Fall Time		160		nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
t <sub>cross</sub> Cross-Over Time		320		nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			55	A	I <sub>SP</sub> = 55 A, V <sub>GS</sub> = 0
I <sub>SM</sub> Source Drain Current (pulsed)			200	A	
V <sub>SD</sub> Forward On Voltage			1.6	V	I <sub>SD</sub> = 55 A, di/dt = 100 A/μs
t <sub>r</sub> Reverse Recovery Time			100	nS	V <sub>R</sub> = 25 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			25	μC	
I <sub>FRM</sub> Reverse Recovery Current			5	A	

\*Pulsed: Pulse Duration ≤ 300μS, Duty Cycle ≤ 1.5%.



OM50N05ST (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AV</sub> Avalanche Current			50	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			400	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>AV</sub> , V <sub>DP</sub> = 25 V)
E <sub>AR</sub> Repetitive Avalanche Energy			100	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>AV</sub> Avalanche Current			30	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DRSS</sub> Drain-Source Breakdown Voltage	50			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>ZSS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)			250 1000	μA	V <sub>DS</sub> = Max. Rat. V <sub>GS</sub> = Max. Rat. x 0.8, T <sub>C</sub> = 125°C
I <sub>GSS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)			±100	nA	V <sub>GS</sub> = ±20 V
<b>Electrical Characteristics - ON*</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage	2		4	V	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance			.038 .066	Ω	V <sub>GS</sub> = 10 V, I <sub>B</sub> = 25 A T <sub>C</sub> = 100°C
I <sub>DM</sub> On-State Drain Current	50			A	V <sub>GS</sub> > I <sub>DM</sub> x R <sub>DS(on)</sub> , V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance	17			S	V <sub>GS</sub> > I <sub>DM</sub> x R <sub>DS(on)</sub> , I <sub>B</sub> = 25 A
C <sub>iss</sub> Input Capacitance			2000	pF	V <sub>GS</sub> = 25 V
C <sub>oss</sub> Output Capacitance			1000	pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance			300	pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>turn-on</sub> Turn-On Time			45	nS	V <sub>DP</sub> = 25 V, I <sub>B</sub> = 29 A
t <sub>r</sub> Rise Time			90	nS	R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10 V
(di/dt) <sub>on</sub> Turn-On Current Slope			200	A/μS	V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A
Q <sub>g</sub> Total Gate Charge			45	nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A, V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>turn-off</sub> Off Voltage Fall Time			160	nS	V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A
t <sub>f</sub> Fall Time			90	nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
t <sub>cross</sub> Cross-Over Time			250	nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			50	A	
I <sub>SDM</sub> Source Drain Current (pulsed)			200	A	
V <sub>SD</sub> Forward On Voltage			2	V	I <sub>SD</sub> = 50 A, V <sub>GS</sub> = 0
t <sub>r</sub> Reverse Recovery Time			150	nS	I <sub>SD</sub> = 50 A, di/dt = 100 A/μs V <sub>R</sub> = 30 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			0.2	μC	
I <sub>RRM</sub> Reverse Recovery Current			4	A	

\*Pulsed: Pulse Duration ≤ 300μS, Duty Cycle ≤ 1.5%.

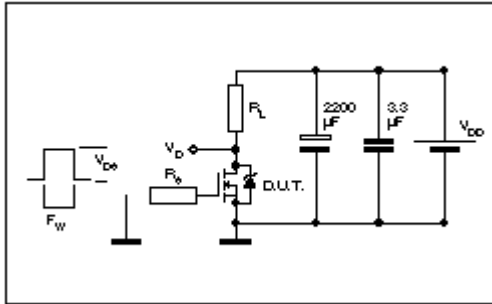
OM50N05SA (T<sub>C</sub> = 25°C unless otherwise specified)

Avalanche Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I <sub>AV</sub> Avalanche Current			50	A	(repetitive or non-repetitive, T <sub>J</sub> = 25°C)
E <sub>AS</sub> Single Pulse Avalanche Energy			400	mJ	(starting T <sub>J</sub> = 25°C, I <sub>B</sub> = I <sub>AV</sub> , V <sub>DP</sub> = 25 V)
E <sub>AR</sub> Repetitive Avalanche Energy			100	mJ	(pulse width limited by T <sub>Jmax</sub> , δ < 1%)
I <sub>AV</sub> Avalanche Current			30	A	(repetitive or non-repetitive, T <sub>J</sub> = 100°C)
<b>Electrical Characteristics - OFF</b>					
V <sub>DRSS</sub> Drain-Source Breakdown Voltage	50			V	I <sub>B</sub> = 250 μA, V <sub>GS</sub> = 0
I <sub>ZSS</sub> Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0)			250 1000	μA	V <sub>DS</sub> = Max. Rat. V <sub>GS</sub> = Max. Rat. x 0.8, T <sub>C</sub> = 125°C
I <sub>GSS</sub> Gate-Body Leakage Current (V <sub>GS</sub> = 0)			±100	nA	V <sub>GS</sub> = ±20 V
<b>Electrical Characteristics - ON*</b>					
V <sub>GS(th)</sub> Gate Threshold Voltage	2		4	V	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>B</sub> = 250 μA
R <sub>DS(on)</sub> Static Drain-Source On Resistance			.028 .066	Ω	V <sub>GS</sub> = 10 V, I <sub>B</sub> = 25 A T <sub>C</sub> = 100°C
I <sub>DM</sub> On-State Drain Current	50			A	V <sub>GS</sub> > I <sub>DM</sub> x R <sub>DS(on)</sub> , V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Dynamic</b>					
g <sub>fs</sub> Forward Transconductance	17			S	V <sub>GS</sub> > I <sub>DM</sub> x R <sub>DS(on)</sub> , I <sub>B</sub> = 25 A
C <sub>iss</sub> Input Capacitance			2000	pF	V <sub>GS</sub> = 25 V
C <sub>oss</sub> Output Capacitance			1000	pF	V <sub>GS</sub> = 0
C <sub>res</sub> Reverse Transfer Capacitance			300	pF	f = 1 MHz
<b>Electrical Characteristics - Switching On</b>					
T <sub>turn-on</sub> Turn-On Time			45	nS	V <sub>DP</sub> = 25 V, I <sub>B</sub> = 29 A
t <sub>r</sub> Rise Time			90	nS	R <sub>G</sub> = 4.7 Ω, V <sub>GS</sub> = 10 V
(di/dt) <sub>on</sub> Turn-On Current Slope			200	A/μS	V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A
Q <sub>g</sub> Total Gate Charge			45	nC	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A, V <sub>GS</sub> = 10 V
<b>Electrical Characteristics - Switching Off</b>					
T <sub>turn-off</sub> Off Voltage Fall Time			160	nS	V <sub>DP</sub> = 40 V, I <sub>B</sub> = 50 A
t <sub>f</sub> Fall Time			90	nS	R <sub>G</sub> = 50 Ω, V <sub>GS</sub> = 10 V
t <sub>cross</sub> Cross-Over Time			250	nS	
<b>Electrical Characteristics - Source Drain Diode</b>					
I <sub>SD</sub> Source Drain Current			50	A	
I <sub>SDM</sub> Source Drain Current (pulsed)			200	A	
V <sub>SD</sub> Forward On Voltage			2	V	I <sub>SD</sub> = 50 A, V <sub>GS</sub> = 0
t <sub>r</sub> Reverse Recovery Time			150	nS	I <sub>SD</sub> = 50 A, di/dt = 100 A/μs V <sub>R</sub> = 30 V, T <sub>J</sub> = 150°C
Q <sub>r</sub> Reverse Recovery Charge			0.2	μC	
I <sub>RRM</sub> Reverse Recovery Current			4	A	

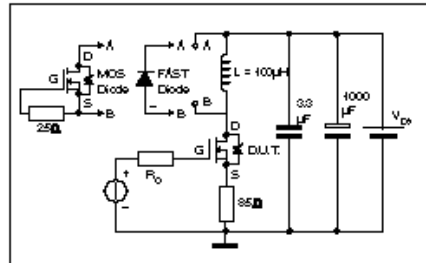
\*Pulsed: Pulse Duration ≤ 300μS, Duty Cycle ≤ 1.5%.



Switching Times Test Circuits For Resistive Load

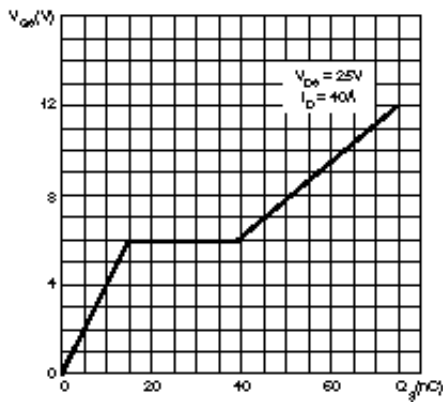


Test Circuit For Inductive Load Switching And Diode Reverse Recovery Time

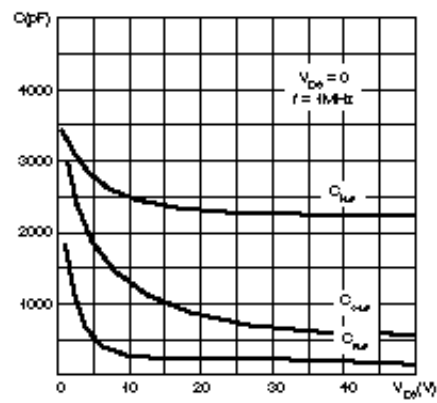


TYPICAL CHARACTERISTICS

Gate Charge vs Gate-Source Voltage

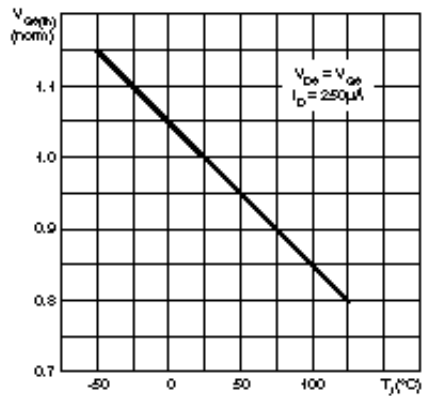


Capacitance Variations



3.1

Normalized Gate Threshold Voltage vs Temperature



Normalized On Resistance vs Temperature

