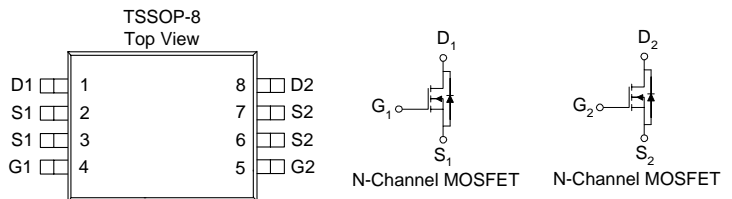


### Dual N-Channel Logical Level MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $r_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe TSSOP-8 saves board space
- Fast switching speed
- High performance trench technology

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (OHM)	$I_D$ (A)
20	0.022 @ $V_{GS} = 4.5$ V	6.8
	0.030 @ $V_{GS} = 2.5$ V	5.8
	0.047 @ $V_{GS} = 1.8$ V	4.7



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	6.8
		$T_A = 70^\circ\text{C}$	5.4
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 30$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.5	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	1.5
		$T_A = 70^\circ\text{C}$	1.0
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter	Symbol	Typ	Max	
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	$t \leq 10$ sec	72	83
		Steady State	100	120
				$^\circ\text{C/W}$

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

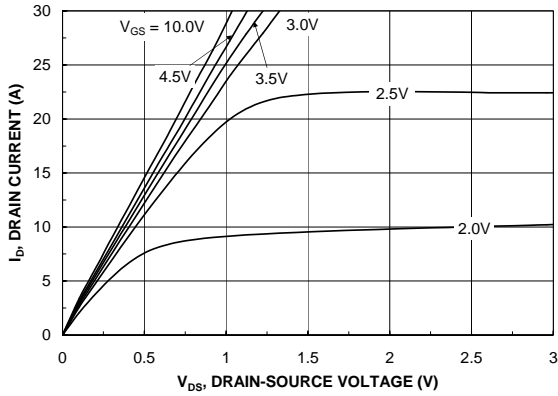
SPECIFICATIONS (T <sub>A</sub> = 25° C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions				Unit
			Min	Typ	Max	
<b>Static</b>						
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250 uA	0.7			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 12 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V			1	uA
		V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C			10	uA
On-State Drain Current <sup>A</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 4.5 V	30			A
Drain-Source On-Resistance <sup>A</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 6.8 A			0.022	Ω
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 5.8 A			0.030	
		V <sub>GS</sub> = 1.8 V, I <sub>D</sub> = 4.7 A			0.047	
Forward Transconductance <sup>A</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 6.8 A		25		S
Diode Forward Voltage <sup>A</sup>	V <sub>SD</sub>	I <sub>S</sub> = 6.8 A, V <sub>GS</sub> = 0 V		0.89		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.8A		13.4		nC
Gate-Source Charge	Q <sub>gs</sub>			0.9		
Gate-Drain Charge	Q <sub>gd</sub>			2.0		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A , R <sub>GEN</sub> =10Ω		18		nS
Rise Time	t <sub>r</sub>			25		
Turn-Off Delay Time	t <sub>d(off)</sub>			50		
Fall-Time	t <sub>f</sub>			25		

Notes

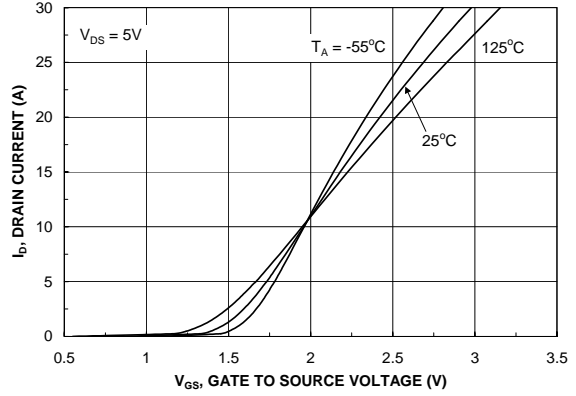
- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.

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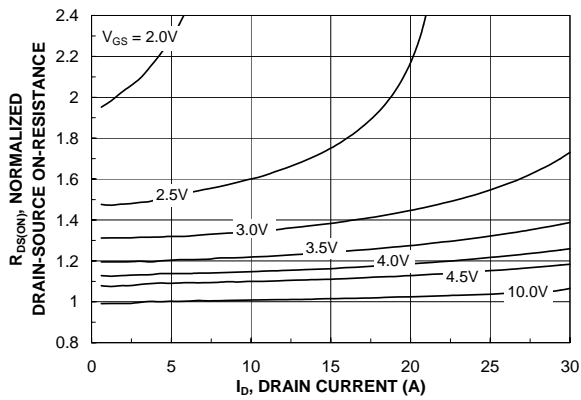
### Typical Electrical Characteristics (N-Channel)



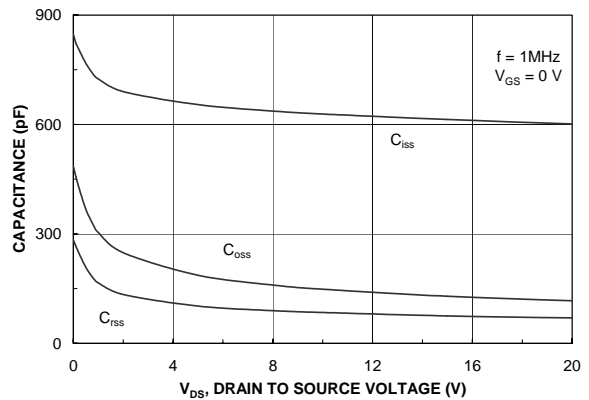
Output Characteristics



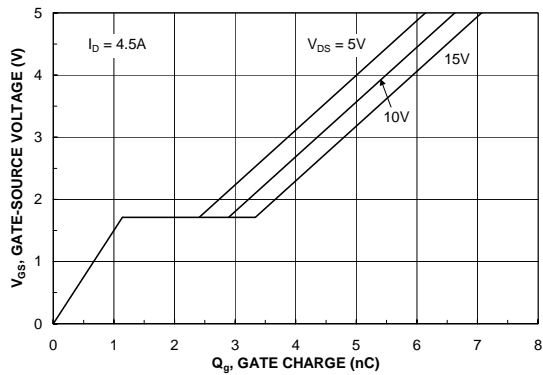
Transfer Characteristics



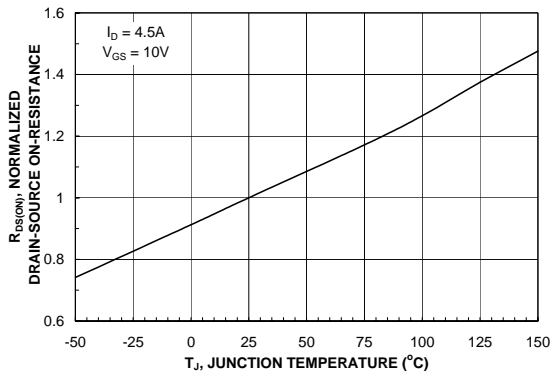
On-Resistance vs. Drain Current



Capacitance

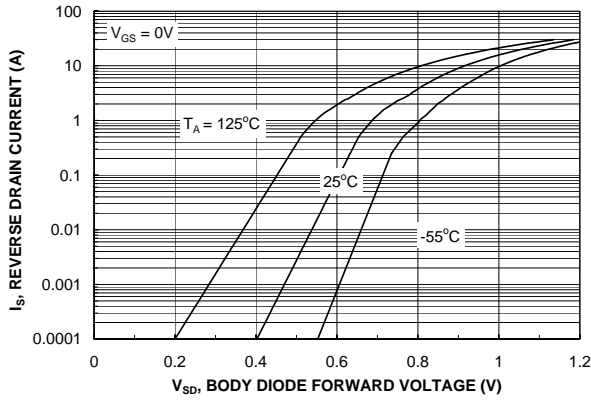


Gate Charge

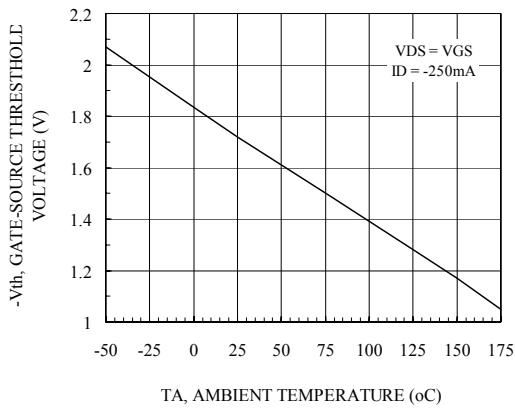


On-Resistance vs. Junction Temperature

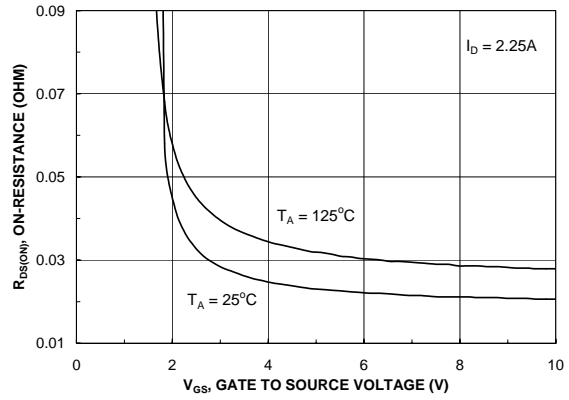
## Typical Electrical Characteristics (N-Channel)



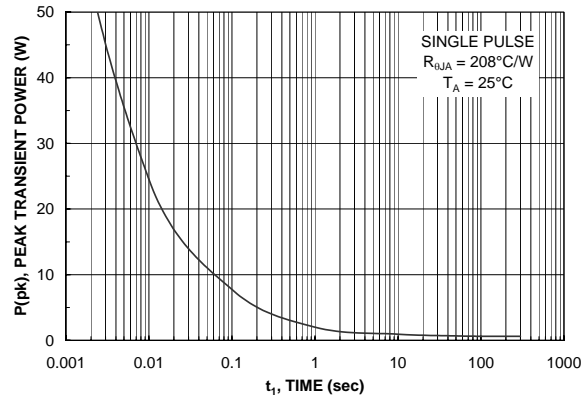
Source-Drain Diode Forward Voltage



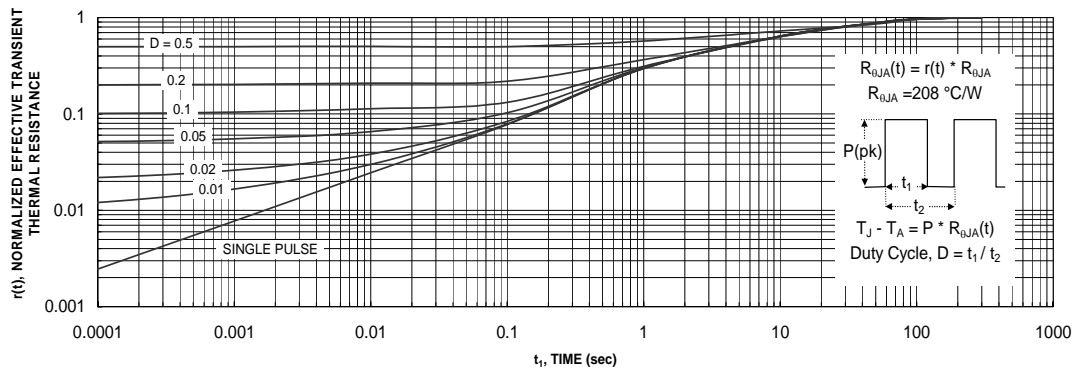
Vth Gate to Source Voltage Vs Temperature



On-Resistance vs. Gate-to-Source Voltage



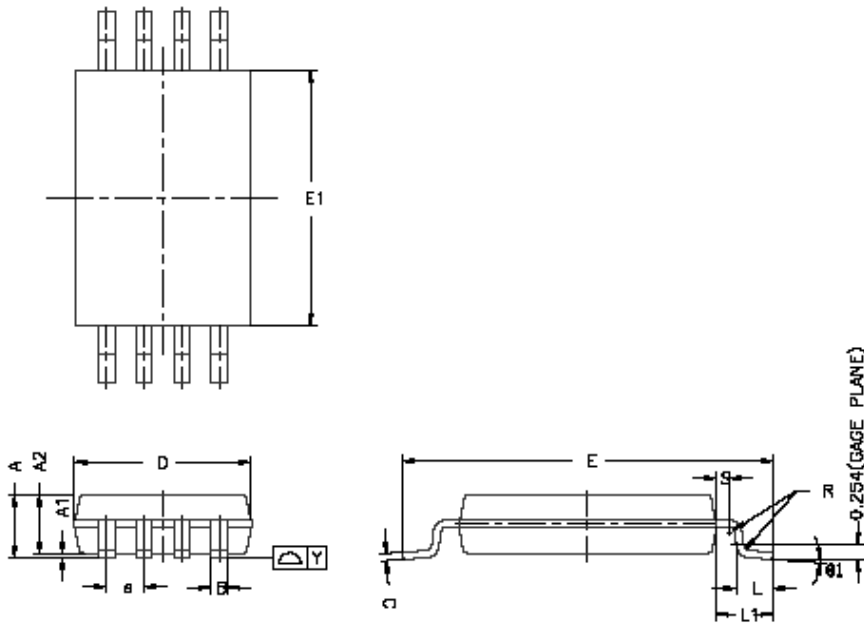
Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Junction to Ambient

Package Information

TSSOP-8: 8LEAD



DIM.	MILLIMETERS		
	MIN.	NDM.	MAX.
A	1.05	1.10	1.20
A(1)	0.05	0.10	0.15
A(2)	0.99	1.02	1.05
B	0.19	0.25	0.30
C	---	0.127	---
D	2.90	3.00	3.10
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
b	0.635C		
L	0.45	0.60	0.75
L1	0.90	1.00	1.10
Y	---	---	0.10
Ø1	Ø	Ø	Ø
R	0.09	---	---
S	0.20	---	---