N-Channel 60-V (D-S) MOSFET

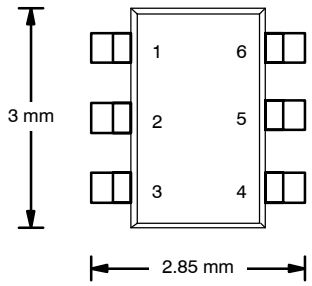
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.10 @ V_{GS} = 10 V	3.2
	0.13 @ V_{GS} = 4.5 V	2.8

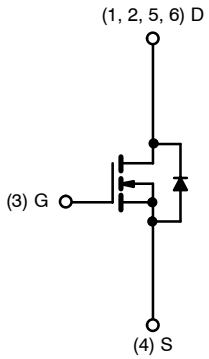
FEATURES

- TrenchFET® Power MOSFET
- 100% R_g Tested
- Lead (Pb)-Free Version is RoHS Compliant

Pb-free Available

TSOP-6
Top View





Ordering Information: Si3458DV-T1
Si3458DV-T1—E3 (Lead (Pb)-Free)

N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (T_J = 150°C)[a, b]	T_A = 25°C	I_D	3.2	A
	T_A = 70°C		2.5	
Pulsed Drain Current		I_{DM}	15	
Single Avalanche Current		I_{AS}	10	
Maximum Power Dissipation[a, b]	T_A = 25°C	P_D	2	W
	T_A = 70°C		1.3	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[a]	t ≤ 5 sec	R_{thJA}		62.5	°C/W
	Steady State		106		
Maximum Junction-to-Lead	Steady State	R_{thJL}	35		

Notes
a. Surface Mounted on FR4 Board.
b. t ≤ 5 sec.

SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

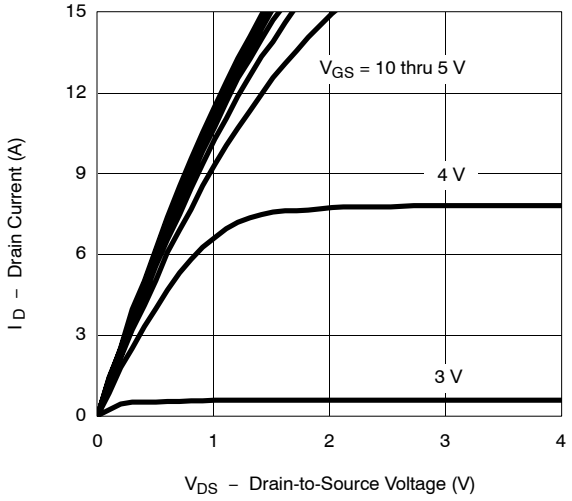
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{DS} = 0 V, I_D = 250 μA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48 V, V_{GS} = 0 V			1	μA
		V_{DS} = 48 V, V_{GS} = 0 V, T_J = 150°C			50	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 10 V	10			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 10 V, I_D = 3.2 A		0.085	0.10	Ω
		V_{GS} = 4.5 V, I_D = 2.8 A		0.110	0.13	
Forward Transconductance[a]	g_{fs}	V_{DS} = 4.5 V, I_D = 3.2 A		8		S
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 30 V, V_{GS} = 10 V, I_D = 3.2 A		8	16	nC
Gate-Source Charge	Q_{gs}			4.0		
Gate-Drain Charge	Q_{gd}			2.0		
Gate Resistance	R_g		1		3.9	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 30 V, R_L = 30 Ω I_D ≅ 1 A, V_{GEN} = 10 V, R_G = 6 Ω		10	20	ns
Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{d(off)}$			20	40	
Fall Time	t_f			10	20	
Source-Drain Rating Characteristics[b]						
Continuous Current	I_S				1.7	A
Pulsed Current	I_{SM}				15	
Diode Forward Voltage[a]	V_{SD}	I_S = 1.7 A, V_{GS} = 0 V			1.2	V
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.7 A, di/dt = 100 A/μs		50	90	ns

Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

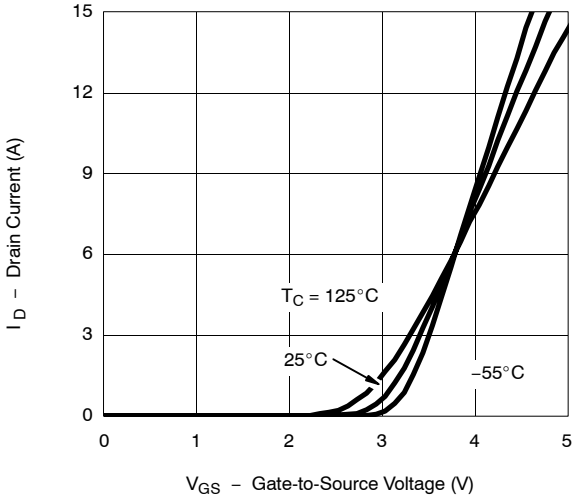
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

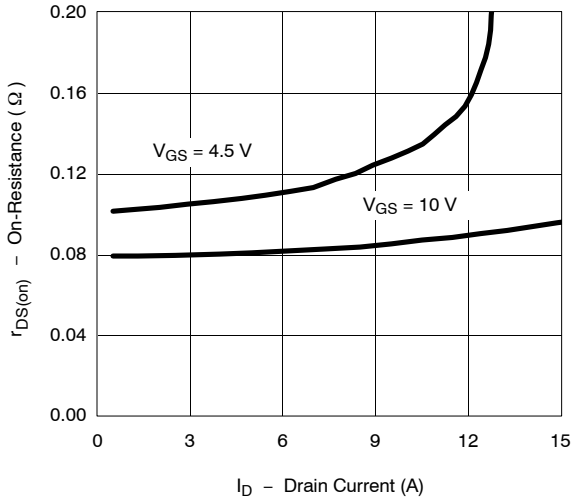
Output Characteristics



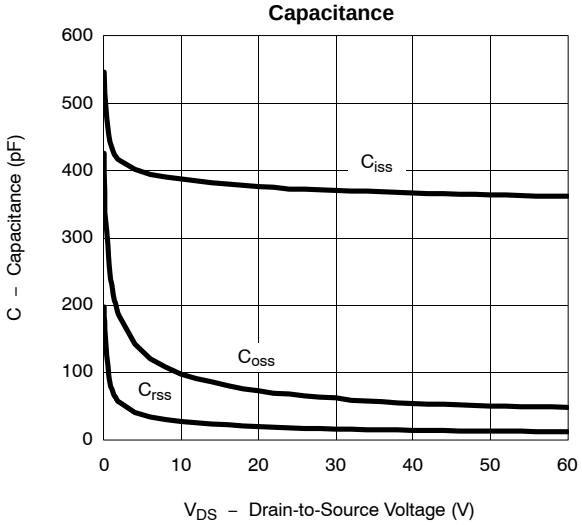
Transfer Characteristics



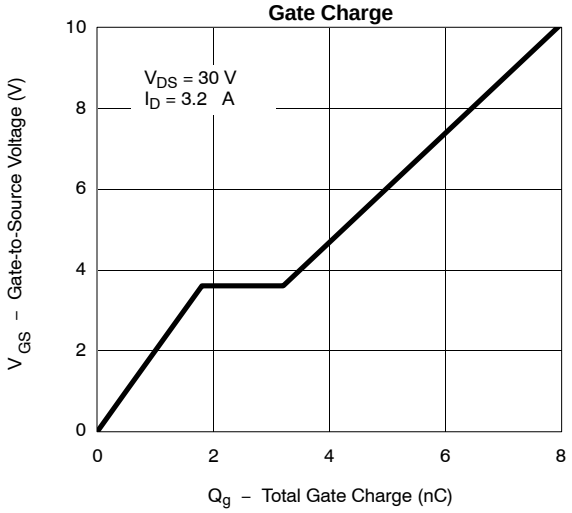
On-Resistance vs. Drain Current



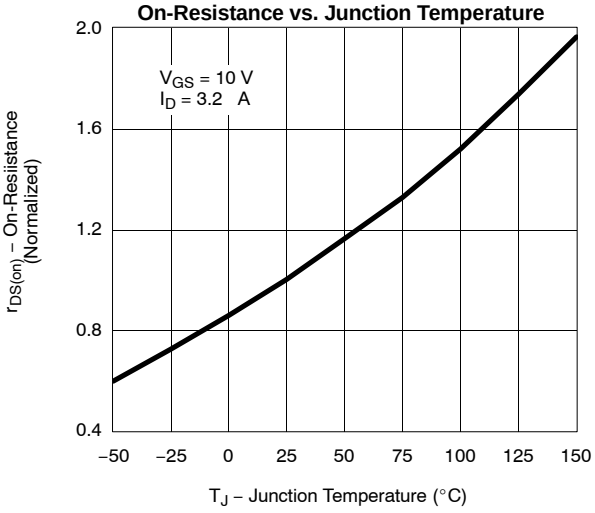
Capacitance



Gate Charge

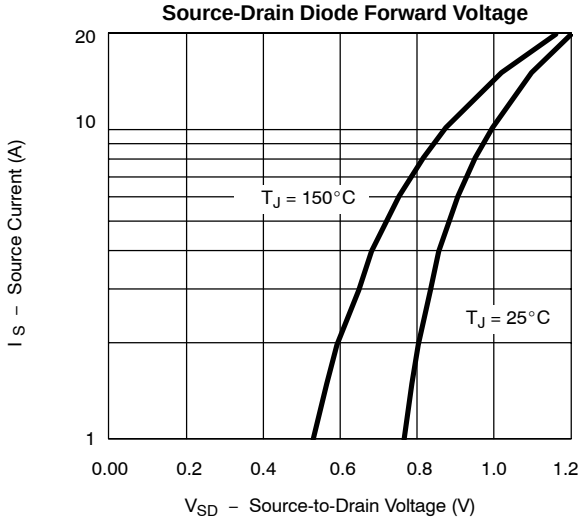


On-Resistance vs. Junction Temperature

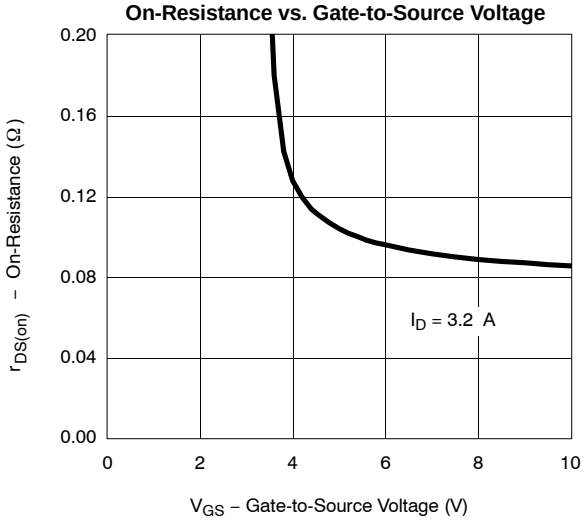


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

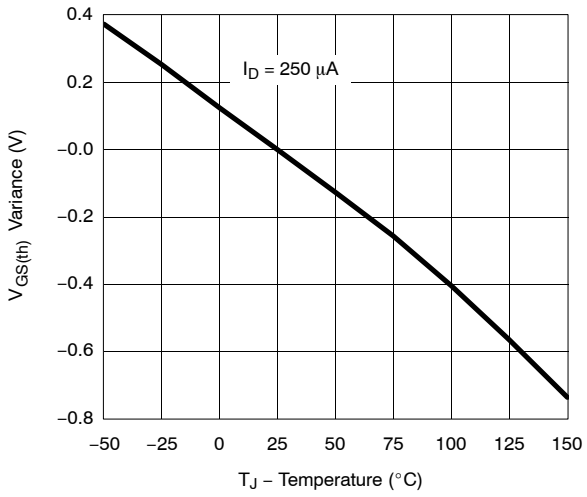
Source-Drain Diode Forward Voltage



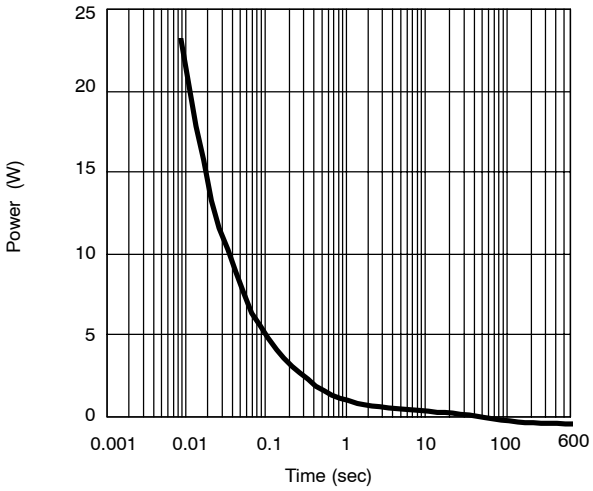
On-Resistance vs. Gate-to-Source Voltage



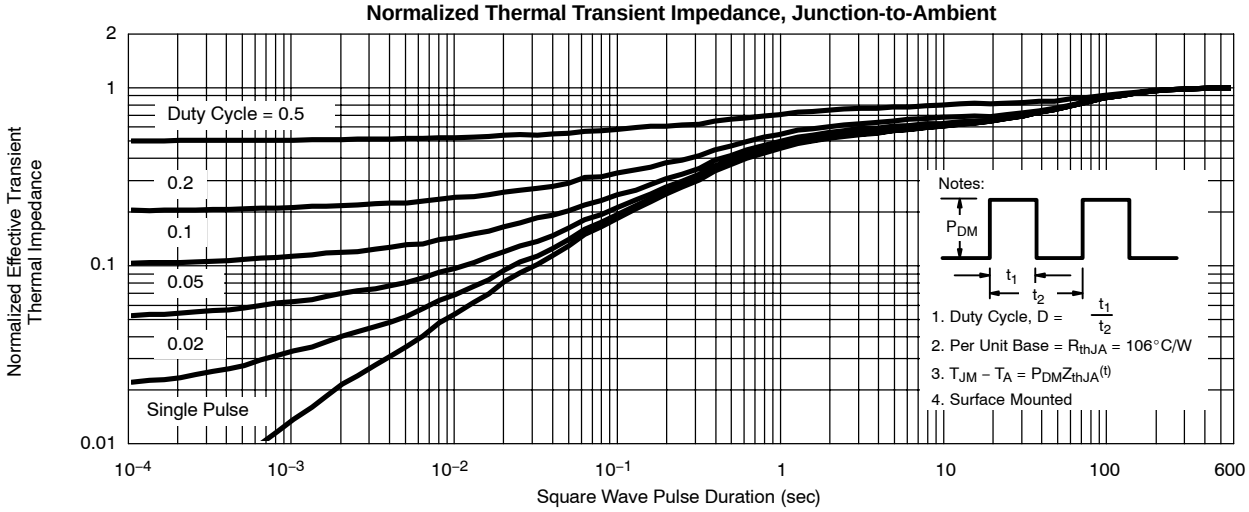
Threshold Voltage



Single Pulse Power



Normalized Thermal Transient Impedance, Junction-to-Ambient



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