

Dual N-Channel 75-V (D-S) MOSFET

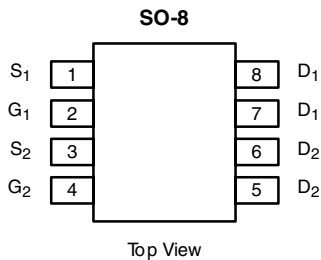
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
75	0.048 at V _{GS} = 10 V	4.8
	0.062 at V _{GS} = 4.5 V	4.2

FEATURES

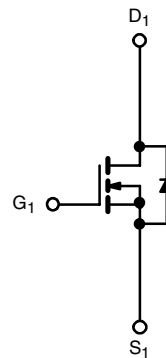
- TrenchFET[®] Power MOSFET
- 175 °C Maximum Junction Temperature
- High-Efficiency PWM Optimized



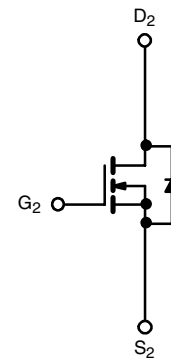
RoHS
COMPLIANT



Ordering Information: Si4992EY-T1-E3 (Lead (Pb)-free)



N-Channel MOSFET



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted					
Parameter	Symbol	10 sec	Steady State	Unit	
Drain-Source Voltage	V _{DS}	75		V	
Gate-Source Voltage	V _{GS}	± 20			
Continuous Drain Current (T _J = 175 °C) ^a	I _D	T _A = 25 °C	4.8	3.6	A
		T _A = 85 °C	3.7	2.8	
Continuous Source Current ^a	I _S	2	1.1		
Pulsed Drain Current	I _{DM}	20			
Avalanche Current	I _{AS}	8		mJ	
Single Avalanche Energy (Duty Cycle ≤ 1 %)	E _{AS}	3.2			
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	2.4	1.4	W
		T _A = 85 °C	1.4	0.8	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R _{thJA}	t ≤ 10 sec	50	62.5	°C/W
		Steady State	85	110	
Maximum Junction-to-Foot (Drain)	R _{thJF}	31	37		

Notes:

a. Surface Mounted on 1" x 1" FR4 Board.



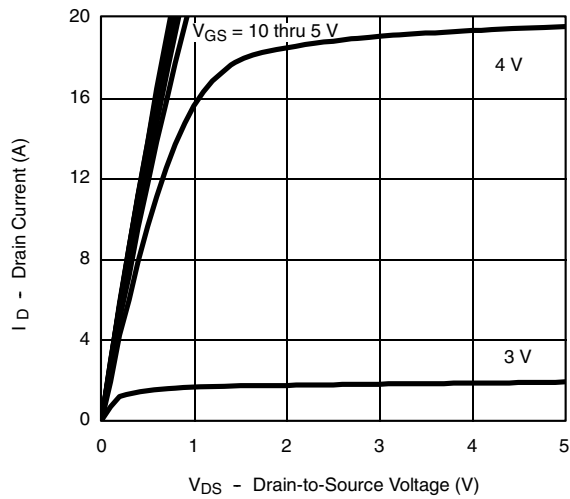
SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	1		3	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 75\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 75\text{ V}, V_{GS} = 0\text{ V}, T_J = 85\text{ }^\circ\text{C}$			20	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	20			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 4.8\text{ A}$		0.039	0.048	Ω
		$V_{GS} = 4.5\text{ V}, I_D = 4.2\text{ A}$		0.050	0.062	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 4.8\text{ A}$		16		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 2.4\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 38\text{ V}, V_{GS} = 10\text{ V}, I_D = 4.8\text{ A}$		14	21	nC
Gate-Source Charge	Q_{gs}			2.4		
Gate-Drain Charge	Q_{gd}			3.5		
Gate Resistance	R_g	$f = 1\text{ MHz}$		3.6		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 38\text{ V}, R_L = 38\text{ }\Omega$ $I_D \cong 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$		7	15	ns
Rise Time	t_r			10	15	
Turn-Off Delay Time	$t_{d(off)}$			22	35	
Fall Time	t_f			10	15	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 2.4\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		25	50	

Notes:

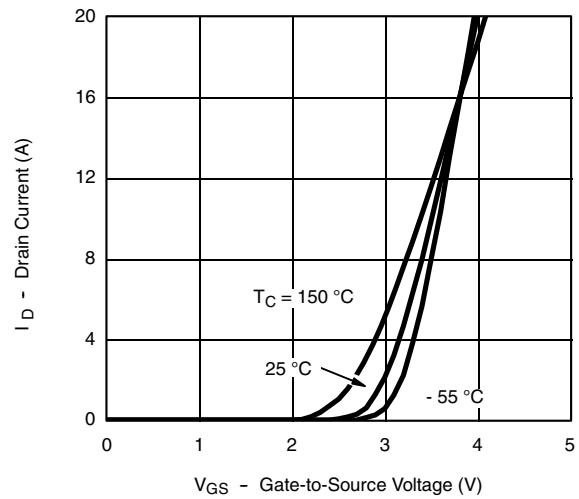
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

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 $25\text{ }^\circ\text{C}$ unless noted



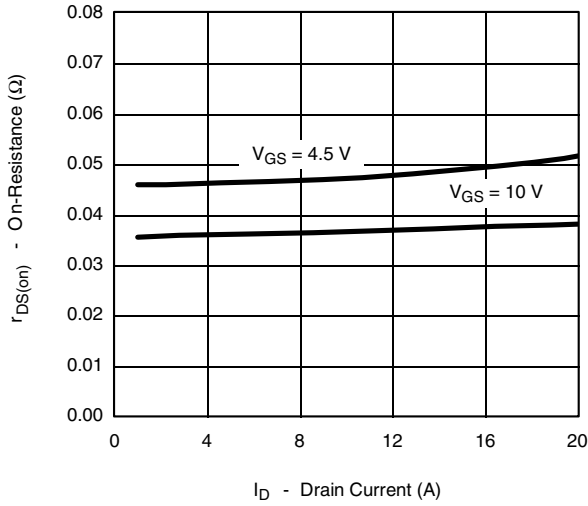
Output Characteristics



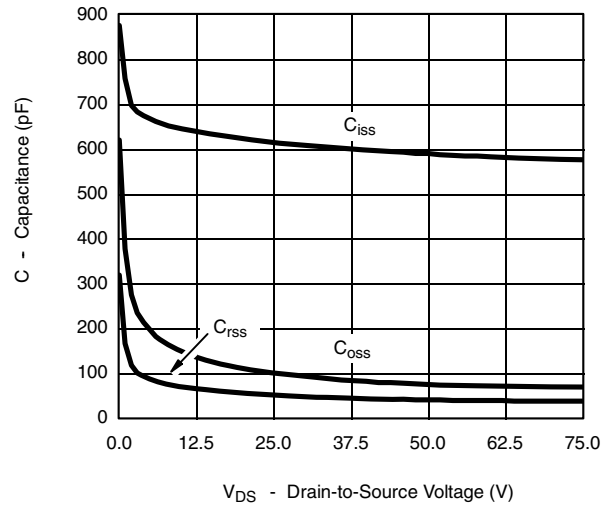
Transfer Characteristics



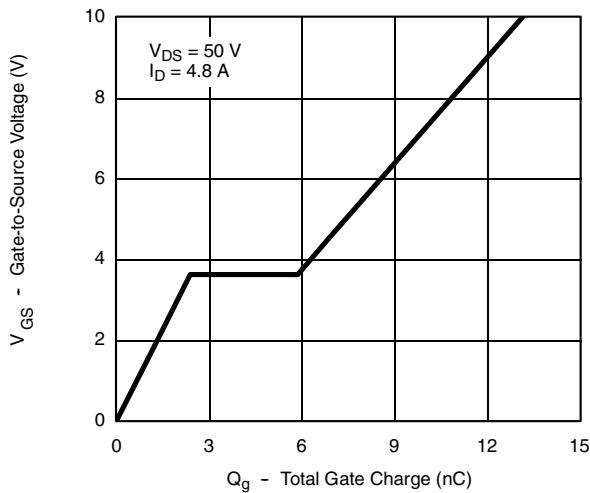
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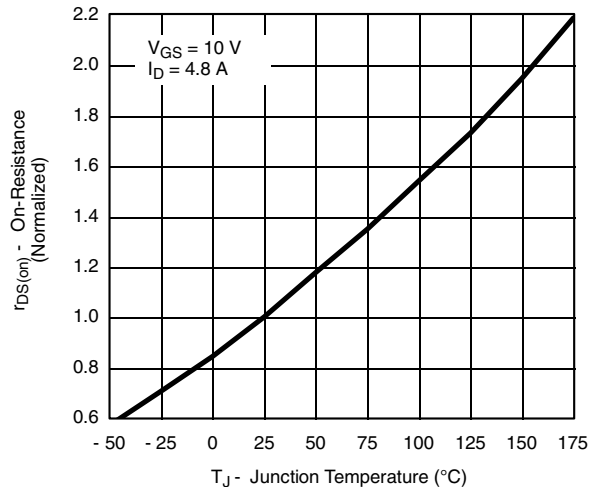
On-Resistance vs. Drain Current



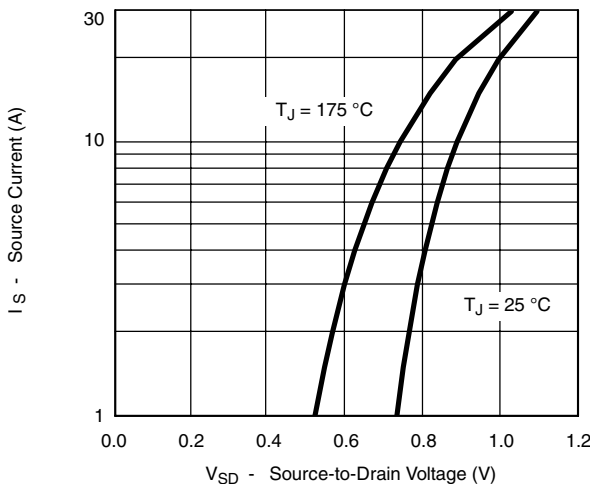
Capacitance



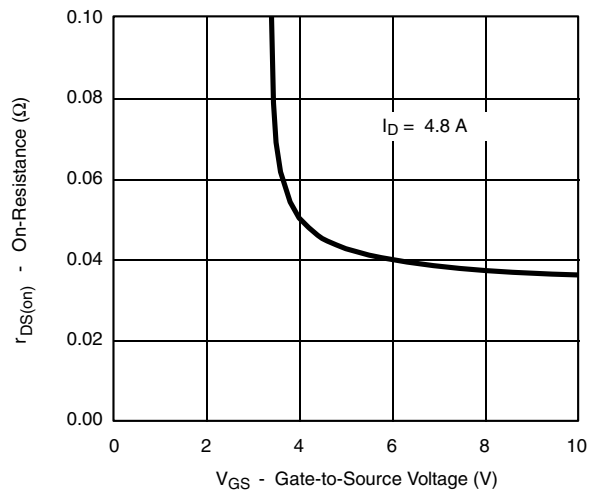
Gate Charge



On-Resistance vs. Junction Temperature



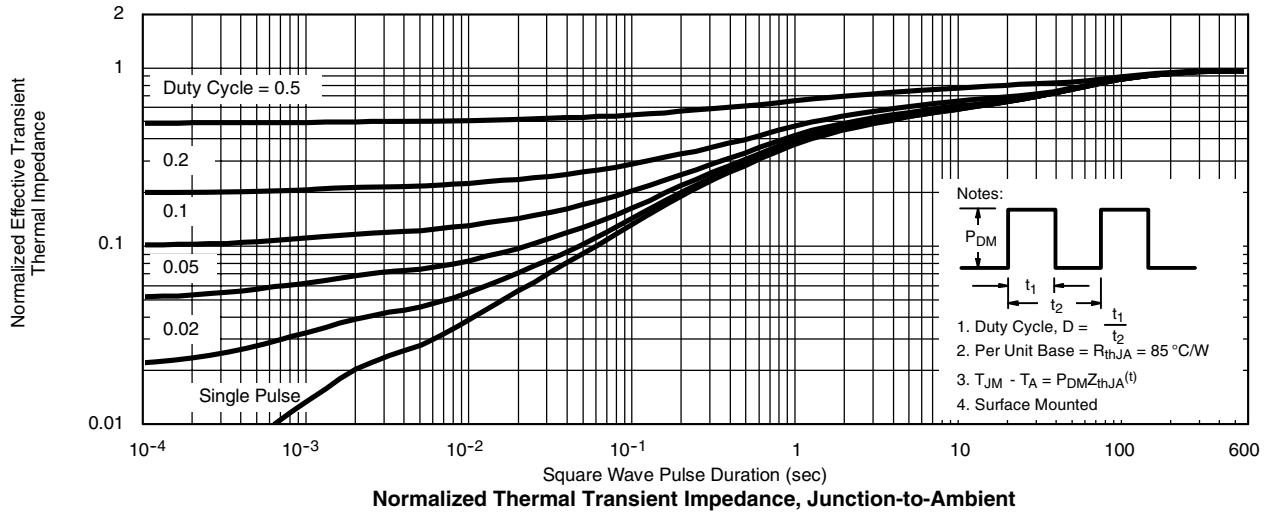
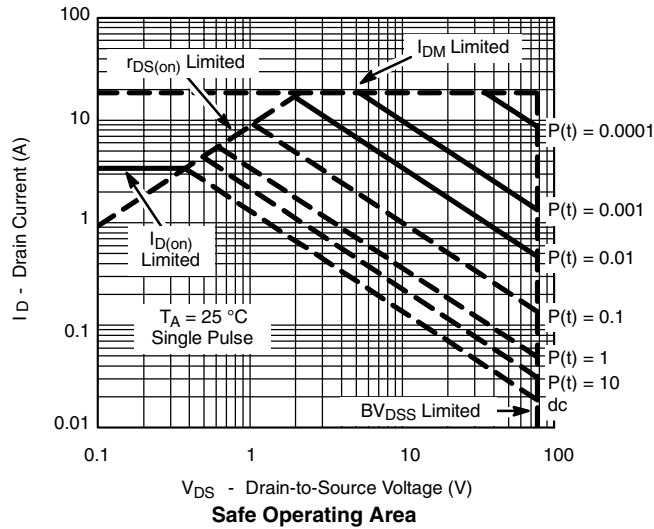
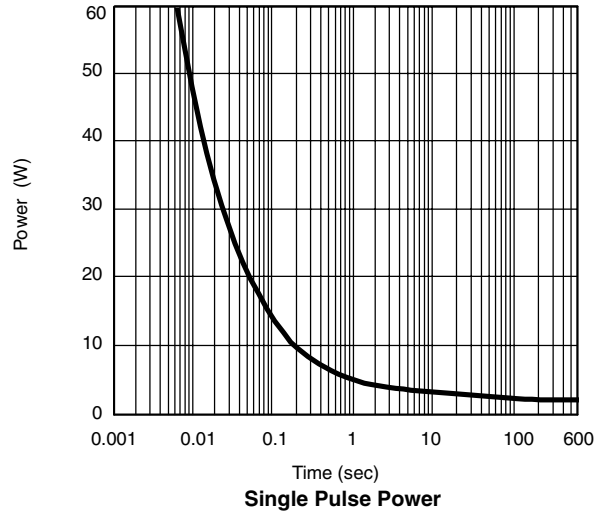
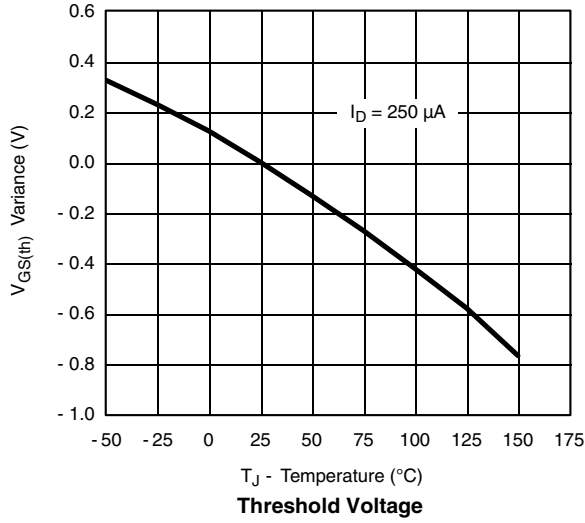
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

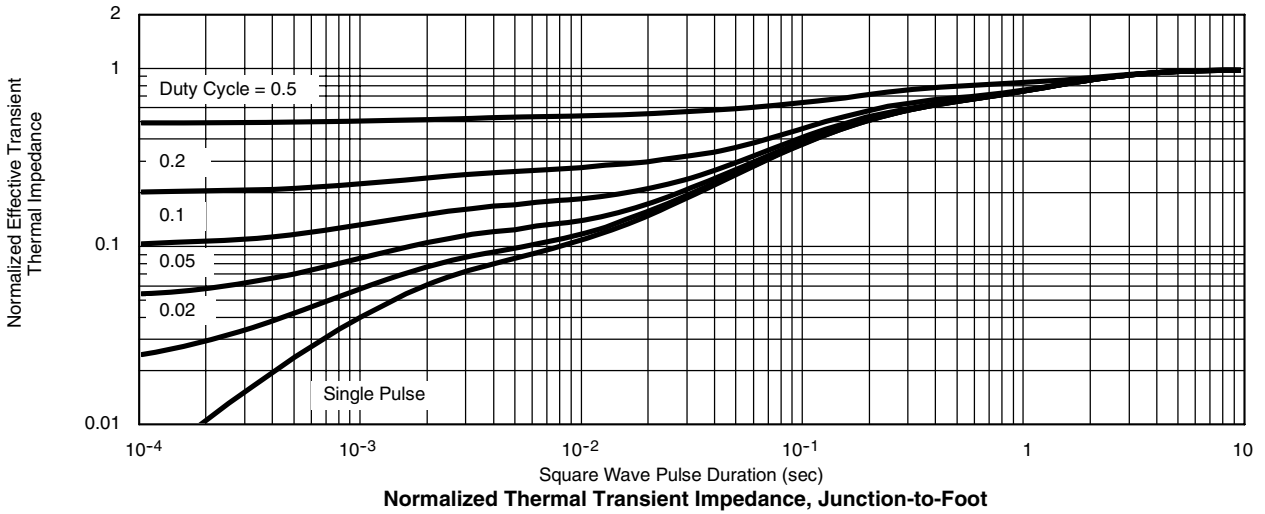


TYPICAL CHARACTERISTICS 25 °C unless noted





TYPICAL CHARACTERISTICS 25 °C unless noted



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