



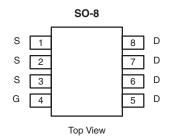
N-Channel Reduced Q_g , Fast Switching MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A)			
60	0.022 at V _{GS} = 10 V	8.5			
	0.031 at V _{GS} = 4.5 V	7.2			

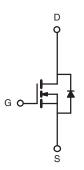
FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFETs
- 175 °C Maximum Junction Temperature
- Compliant to RoHS Directive 2002/95/EC





Ordering Information: Si4850EY-T1-E3 (Lead (Pb)-free) Si4850EY-T1-GE3 (Lead (Pb)-free and Halogen-free)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS T	A = 25 °C, unles	ss otherwise n	oted		
Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage		V_{DS}	60		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current (T _{.I} = 175 °C) ^a	T _A = 25 °C	I _D	8.5	6.0	
Continuous Diain Current (1) = 175 C)	T _A = 70 °C		7.1	5.0	Α
Pulsed Drain Current		I _{DM}	40		A
Avalanche Current	I _{AS}	15			
Single Pulse Avalanche Energy		E _{AS}	11		mJ
Manifesture Description of the office of the	T _A = 25 °C	P _D	3.3	1.7	W
Maximum Power Dissipation ^a	T _A = 70 °C		2.3	1.2	VV
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175		°C	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Mariana la Ambiant A	t ≤ 10 s	R _{thJA}	36	45	°C/W
Maximum Junction-to-Ambient ^a	Steady State		75	90	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	17	20	

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

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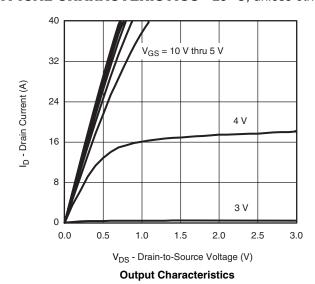
SPECIFICATIONS T _J = 25 °C	, unless of	herwise noted					
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage V _{DS}		$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	60			V	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \mu A$	1		3	V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$			1	μΑ	
	D33	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 ^{\circ}\text{C}$			20		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, V_{GS} = 10 \text{ V}$	40			Α	
		$V_{GS} = 10 \text{ V}, I_D = 6.0 \text{ A}$		0.018	0.022		
D : 0	D	$V_{GS} = 10 \text{ V}, I_D = 6.0 \text{ A}, T_J = 125 ^{\circ}\text{C}$		0.031	0.037	Ω	
Drain-Source On-State Resistance ^a	R _{DS(on)}	$V_{GS} = 10 \text{ V}, I_D = 6.0 \text{ A}, T_J = 175 ^{\circ}\text{C}$		0.039	0.047		
		$V_{GS} = 4.5 \text{ V}, I_D = 5.1 \text{ A}$		0.025	0.031		
Forward Transconductance ^a	9 _{fs}	$V_{DS} = 15 \text{ V}, I_D = 6.0 \text{ A}$		25		S	
Diode Forward Voltage ^a	V_{SD}	I _S = 1.7 A, V _{GS} = 0 V		0.8	1.2	V	
Dynamic ^b			•		•		
Total Gate Charge Q _g				18	27	nC	
Gate-Source Charge	Q_{gs}	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 6.0 \text{ A}$		3.4			
Gate-Drain Charge	Q_{gd}			5.3			
Gate Resistance	R_{g}	V _{GS} = 0.1 V, f = 5 MHz	0.5	1.4	2.4	Ω	
Turn-On Delay Time	t _{d(on)}			10	20		
Rise Time t _r		V_{DD} = 30 V, R_L = 30 Ω		10	20		
Turn-Off Delay Time	t _{d(off)}	$I_D\cong$ 1 A, V_{GEN} = 10 V, R_g = 6 Ω		25	50	ns	
Fall Time	t _f			12	24		
Source-Drain Reverse Recovery Time	t _{rr}	$I_F = 1.7 \text{ A}, dI/dt = 100 \text{ A/}\mu\text{s}$		50	80		

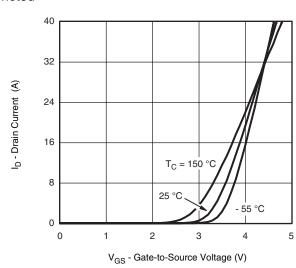
Notes:

- a. Pulse test; pulse width \leq 300 $\mu s,$ 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 °C, unless otherwise noted





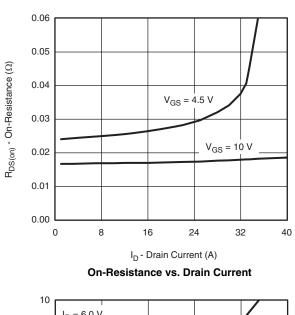
Transfer Characteristics

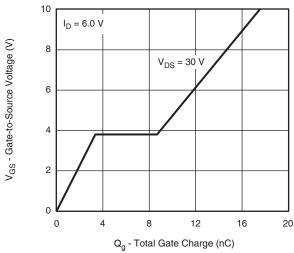




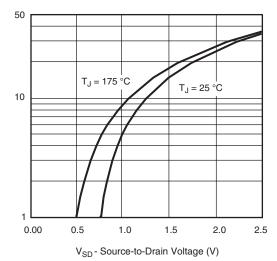


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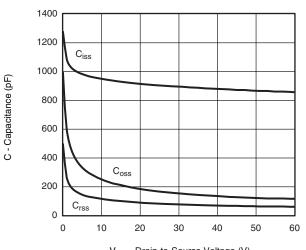




Gate Charge

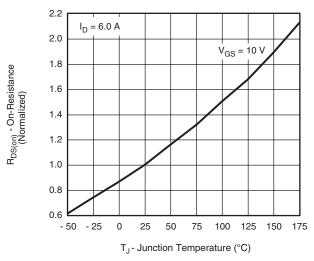


Source-Drain Diode Forward Voltage

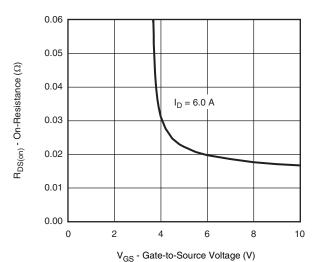


V_{DS} - Drain-to-Source Voltage (V)

Capacitance



On-Resistance vs. Junction Temperature



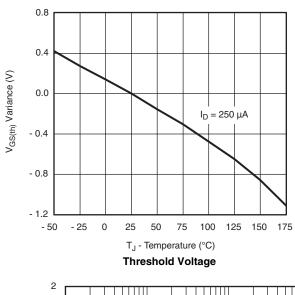
On-Resistance vs. Gate-to-Source Voltage

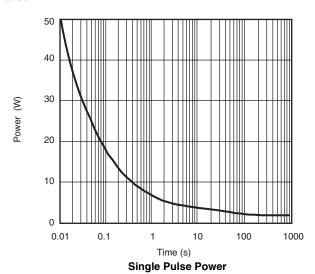
I_S - Source Current (A)

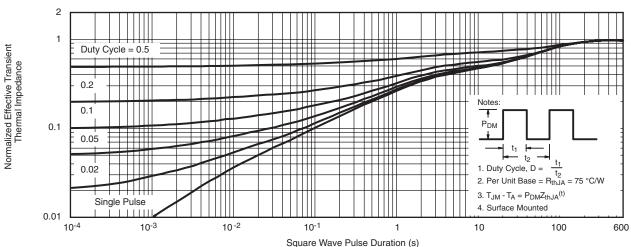
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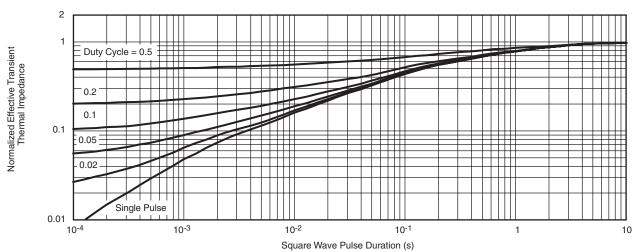
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted







Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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SOIC (NARROW): 8-LEAD JEDEC Part Number: MS-012







	MILLIMETERS INCHES			HES		
DIM	Min	Max	Min	Max		
Α	1.35	1.75	0.053	0.069		
A ₁	0.10	0.20	0.004	0.008		
В	0.35	0.51	0.014	0.020		
С	0.19	0.25	0.0075	0.010		
D	4.80	5.00	0.189	0.196		
E	3.80	4.00	0.150	0.157		
е	1.27 BSC		0.050 BSC			
Н	5.80	6.20	0.228	0.244		
h	0.25	0.50	0.010	0.020		
L	0.50	0.93	0.020	0.037		
q	0°	8°	0°	8°		
S	0.44	0.64	0.018	0.026		
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DWG: 5498

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RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads Dimensions in Inches/(mm)

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