



N-Channel 30-V MOSFET

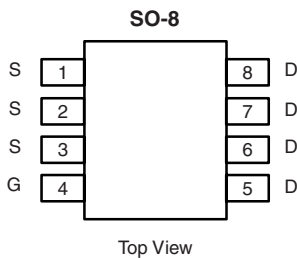
PRODUCT SUMMARY		
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
30	0.007 at V _{GS} = 10 V	16
	0.0085 at V _{GS} = 4.5 V	14

FEATURES

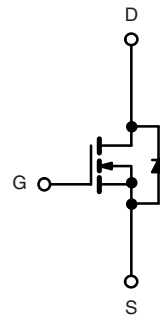
- TrenchFET[®] Power MOSFETS
- 100 % R_g Tested



RoHS
COMPLIANT



Ordering Information: Si4874BDY-T1-E3 (Lead (Pb)-free)



ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted					
Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage	V _{DS}	30		V	
Gate-Source Voltage	V _{GS}	± 20			
Continuous Drain Current (T _J = 150 °C) ^a	I _D	T _A = 25 °C	16	12	A
		T _A = 70 °C	13	9	
Pulsed Drain Current	I _{DM}	± 50			
Continuous Source Current (Diode Conduction) ^a	I _S	2.7	1.40		
Maximum Power Dissipation ^a	P _D	T _A = 25 °C	3.0	1.6	W
		T _A = 70 °C	2.0	1.0	
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 (MOSFET) ^a	R _{thJA}	t ≤ 10 s	34	41	°C/W
		Steady State	68	80	
Maximum Junction-to-Foot (Drain)	R _{thJF}	16	21		

Notes:

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



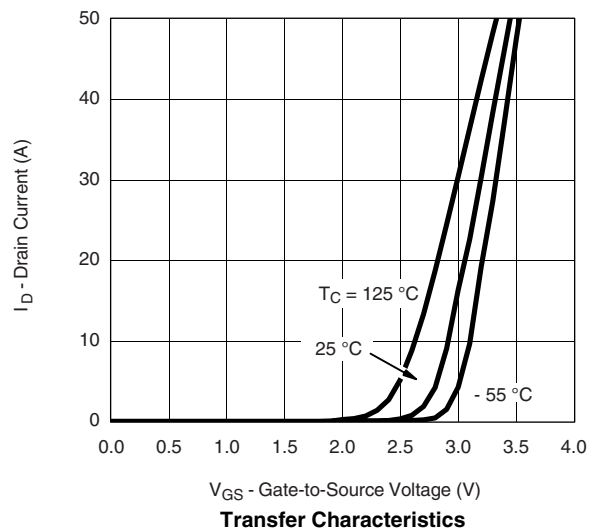
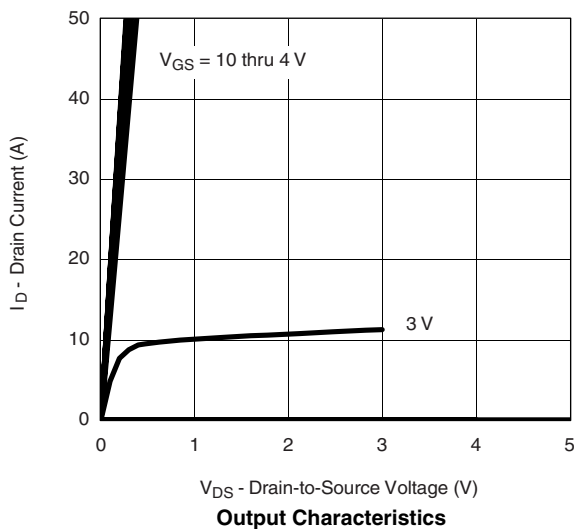
MOSFET SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1.0		3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}, V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 30\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 70\text{ }^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}, V_{GS} = 10\ \text{V}$	30			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 16\ \text{A}$		0.0057	0.007	Ω
		$V_{GS} = 4.5\ \text{V}, I_D = 14\ \text{A}$		0.0068	0.0085	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\ \text{V}, I_D = 16\ \text{A}$		65		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 2.7\ \text{A}, V_{GS} = 0\ \text{V}$		0.74	1.1	V
Dynamic^b						
Input Capacitance	C_{iss}	$V_{DS} = 15\ \text{V}, V_{GS} = 0\ \text{V}, f = 1\ \text{MHz}$		3230		pF
Output Capacitance	C_{oss}			585		
Reverse Transfer Capacitance	C_{rss}			255		
Total Gate Charge	Q_g	$V_{DS} = 15\ \text{V}, V_{GS} = 4.5\ \text{V}, I_D = 16\ \text{A}$		21	25	nC
Gate-Source Charge	Q_{gs}			9.5		
Gate-Drain Charge	Q_{gd}			6.5		
Gate Resistance	R_g		0.4	0.9	1.4	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}, R_L = 15\ \Omega$ $I_D \cong 1\ \text{A}, V_{GEN} = 10\ \text{V}, R_g = 6\ \Omega$		16	25	ns
Rise Time	t_r			10	20	
Turn-Off Delay Time	$t_{d(off)}$			57	90	
Fall Time	t_f			15	25	
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = 2.7\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		40	

Notes:

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

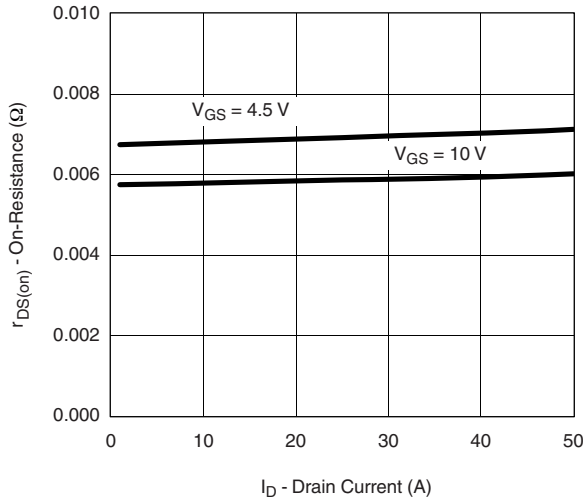
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS $25\text{ }^\circ\text{C}$, unless otherwise noted

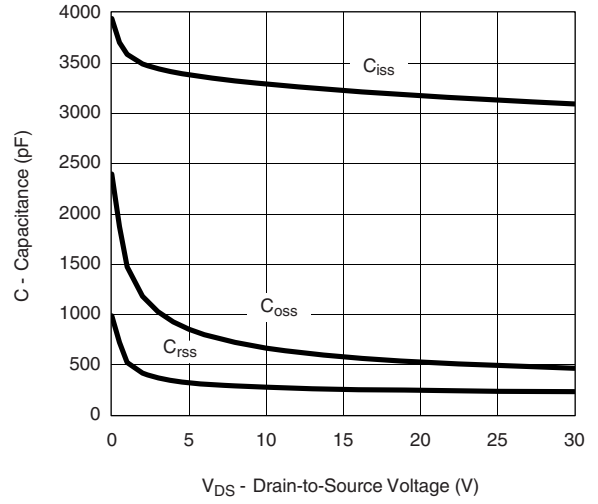




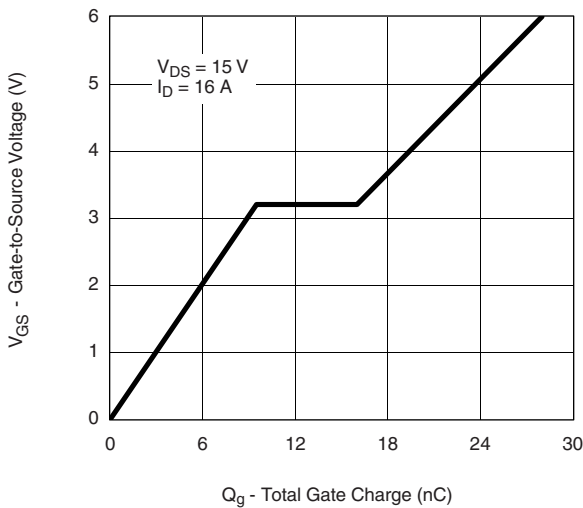
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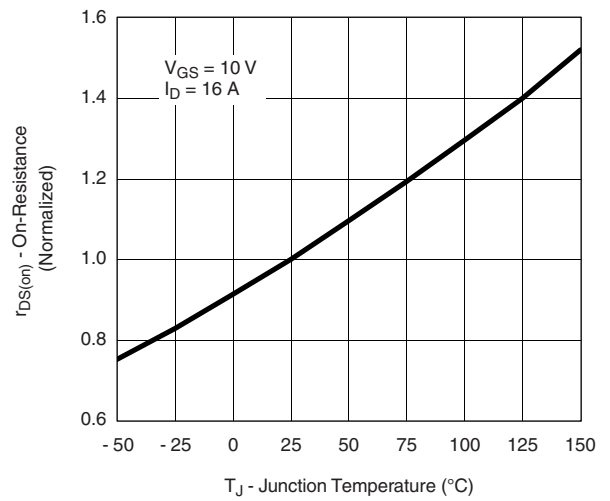
On-Resistance vs. Drain Current



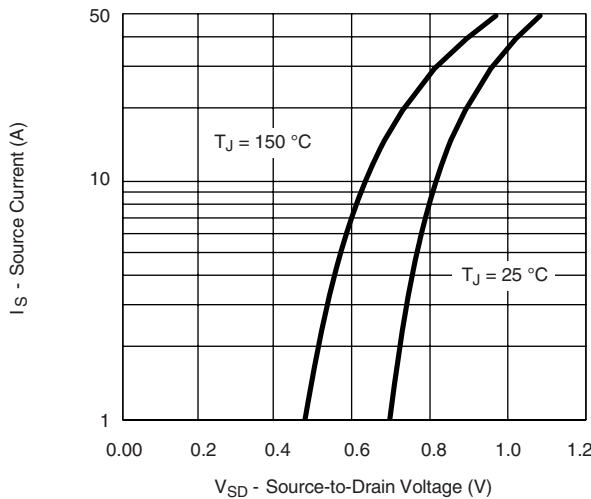
Capacitance



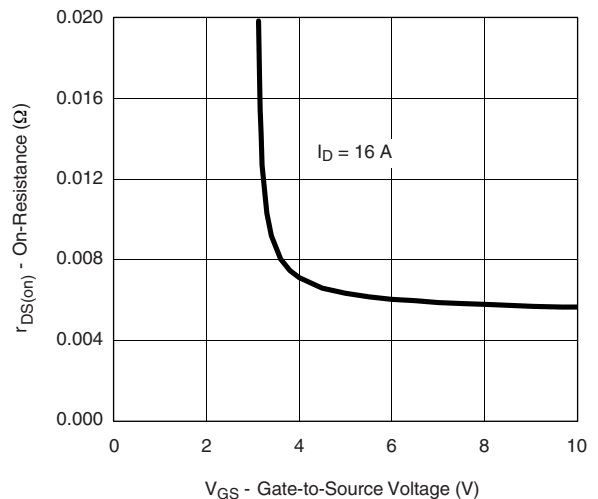
Gate Charge



On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



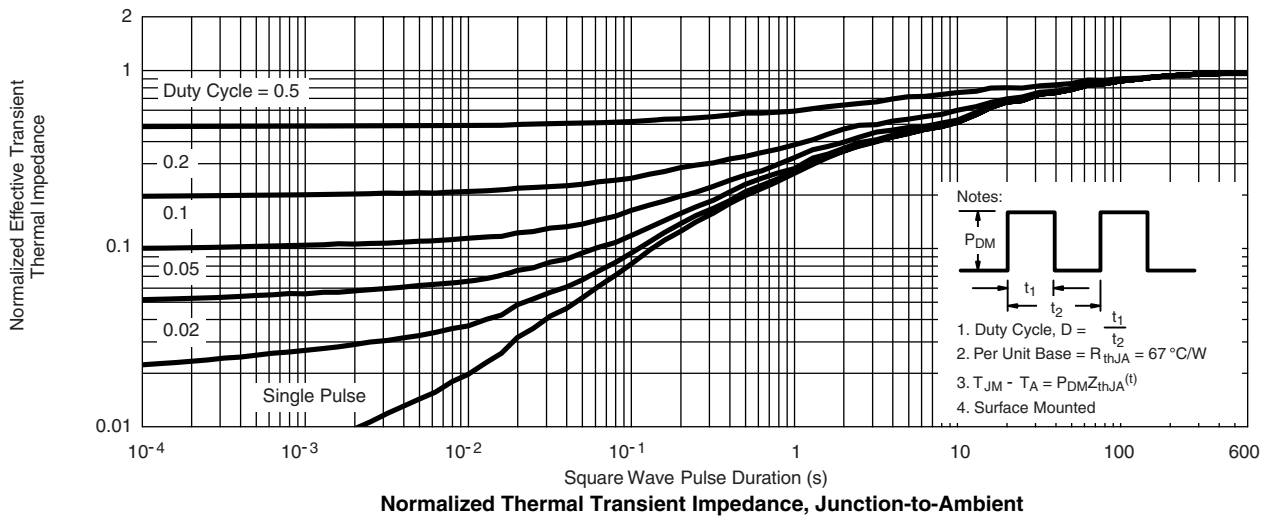
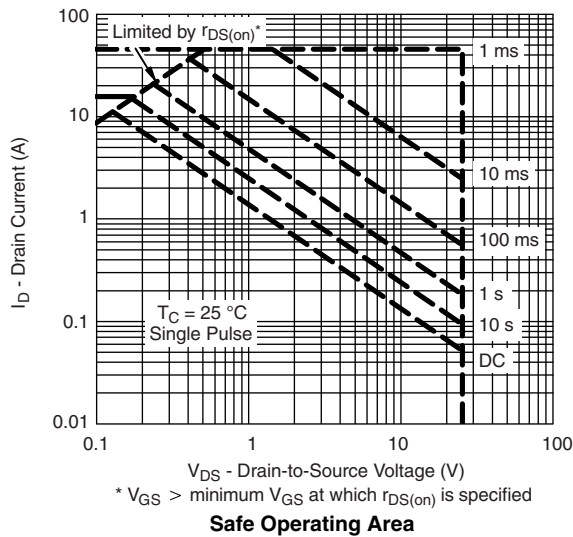
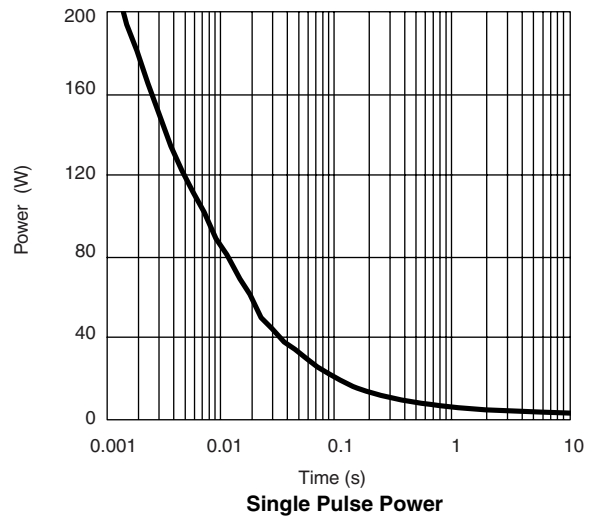
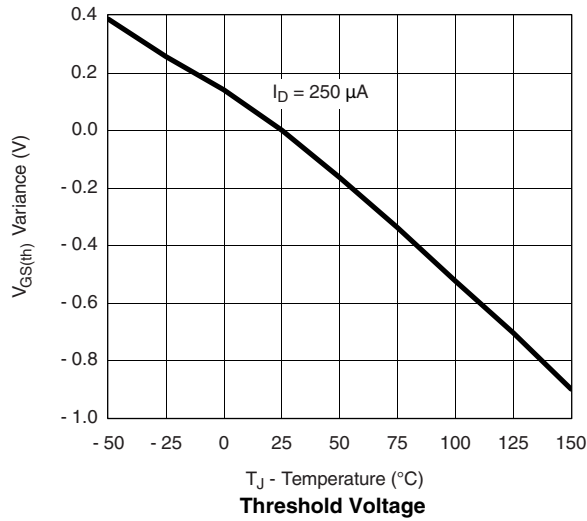
On-Resistance vs. Gate-to-Source Voltage

Si4874BDY

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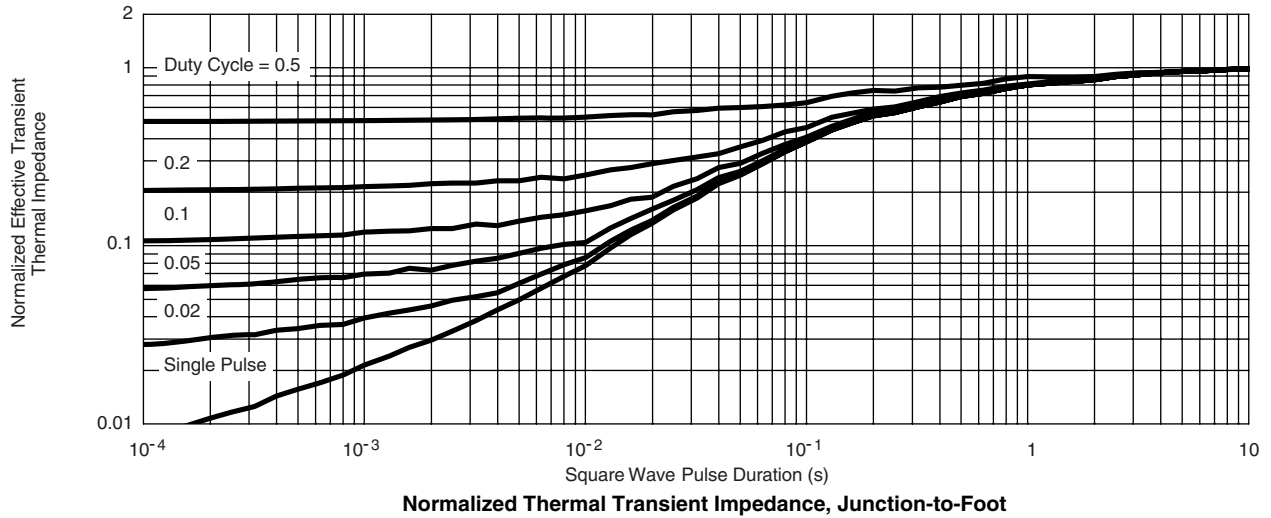


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted





TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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