

P-Channel 12-V (D-S) MOSFET

PRODUCT SUMMARY

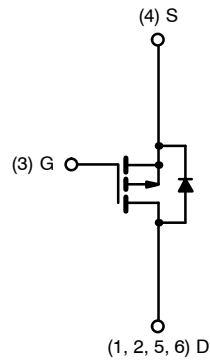
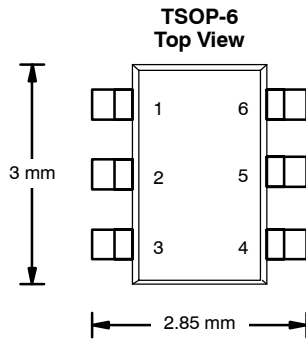
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-12	0.040 @ $V_{GS} = -4.5$ V	-6.0
	0.053 @ $V_{GS} = -2.5$ V	-5.2
	0.072 @ $V_{GS} = -1.8$ V	-4.5

FEATURES

- TrenchFET® Power MOSFET: 1.8-V Rated
- Ultra Low On-Resistance

APPLICATIONS

- Load Switch
- PA Switch



Ordering Information: Si3447BDV-T1
Si3447BDV-T1—E3 (Lead Free)

Marking Code: B7xxx

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	5 secs	Steady State	Unit	
Drain-Source Voltage	V_{DS}	-12		V	
Gate-Source Voltage	V_{GS}	± 8			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-6.0	-4.5	A
		$T_A = 85^\circ\text{C}$	-4.3	-3.3	
Pulsed Drain Current	I_{DM}	-20			
Continuous Diode Current (Diode Conduction) ^a	I_S	-1.7	-0.9		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	2.0	1.1	W
		$T_A = 85^\circ\text{C}$	1.0	0.6	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 5$ sec	50	62.5	$^\circ\text{C/W}$
		Steady State	90	110	
Maximum Junction-to-Foot (Drain)	R_{thJF}	30	36		

Notes

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

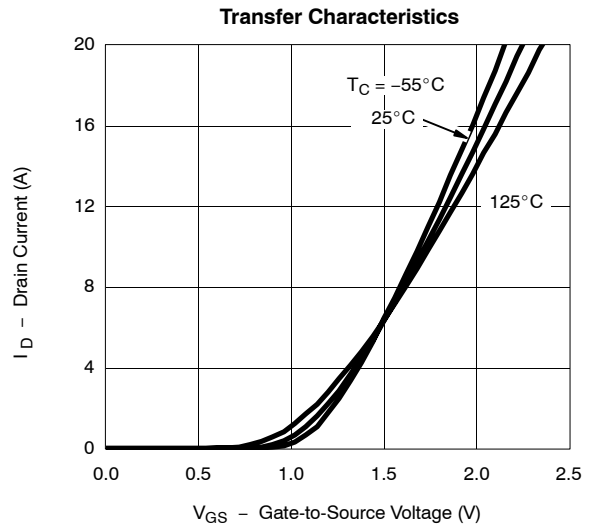
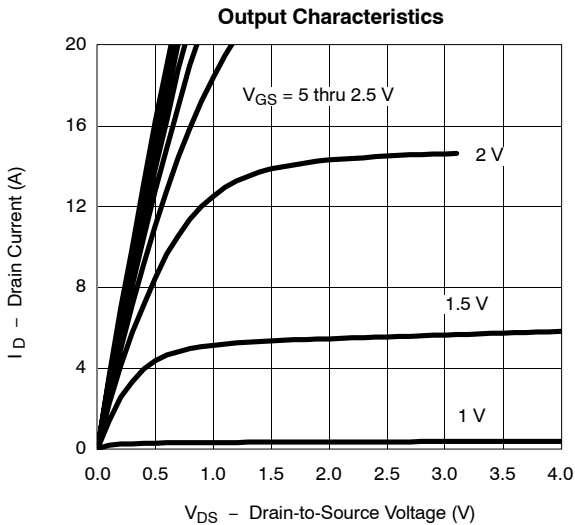


SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.45		1	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -12 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -12 V, V _{GS} = 0 V, T _J = 85 °C			-5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-20			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -6.0 A		0.033	0.040	Ω
		V _{GS} = -2.5 V, I _D = -5.2 A		0.044	0.053	
		V _{GS} = -1.8 V, I _D = -2.0 A		0.060	0.072	
Forward Transconductance ^a	g _{fs}	V _{DS} = -5 V, I _D = -6.0 A		15		S
Diode Forward Voltage ^a	V _{SD}	I _S = -1.7 A, V _{GS} = 0 V		-0.7	-1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -6 V, V _{GS} = -4.5 V, I _D = -6.0 A		9.3	14	nC
Gate-Source Charge	Q _{gs}			1.5		
Gate-Drain Charge	Q _{gd}			2.6		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -6 V, R _L = 6 Ω I _D ≅ -1 A, V _{GEN} = -4.5 V, R _g = 6 Ω		20	30	ns
Rise Time	t _r			46	70	
Turn-Off Delay Time	t _{d(off)}			62	95	
Fall Time	t _f			62	95	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -1.7 A, di/dt = 100 A/μs		40	80	

Notes

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

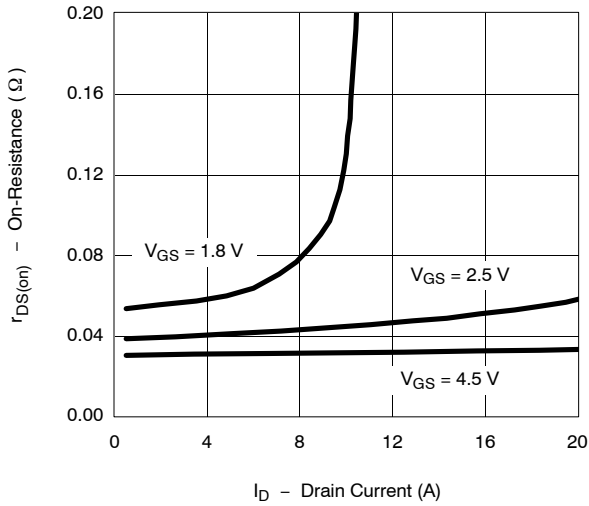
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



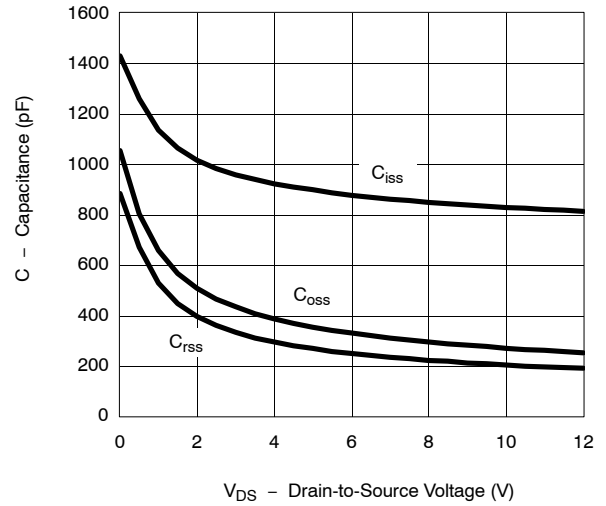


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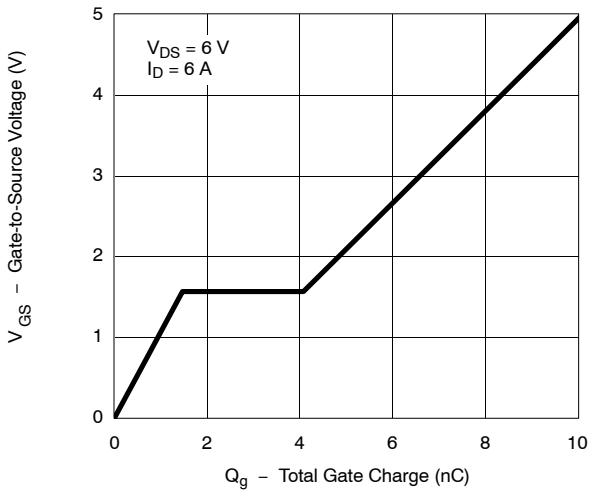
On-Resistance vs. Drain Current



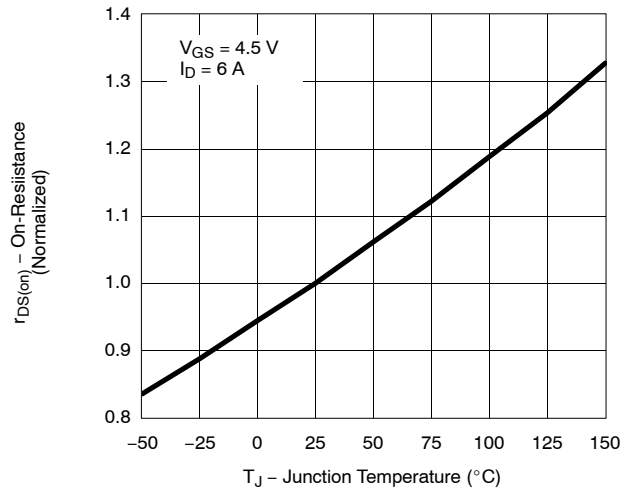
Capacitance



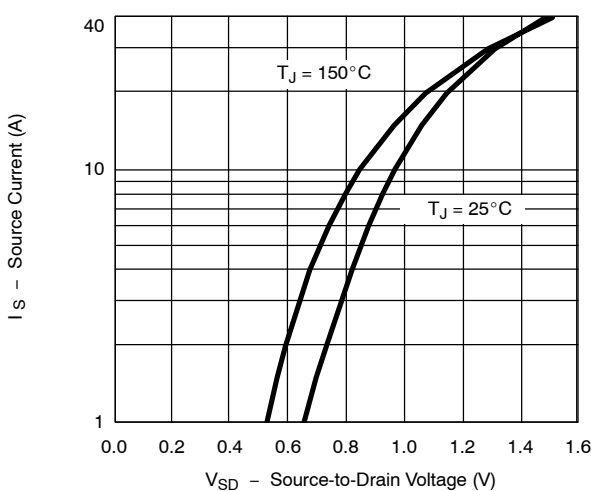
Gate Charge



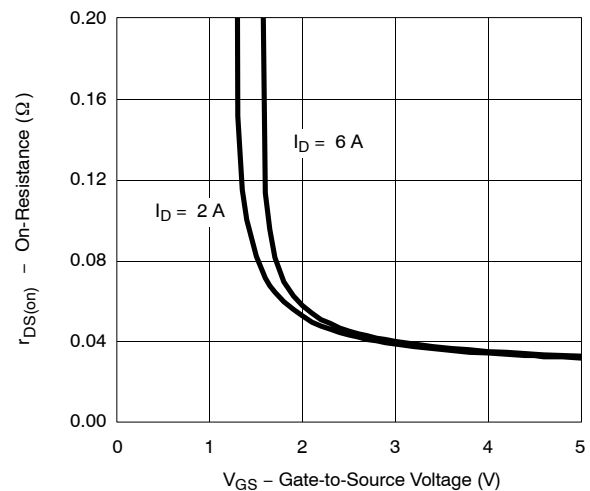
On-Resistance vs. Junction Temperature



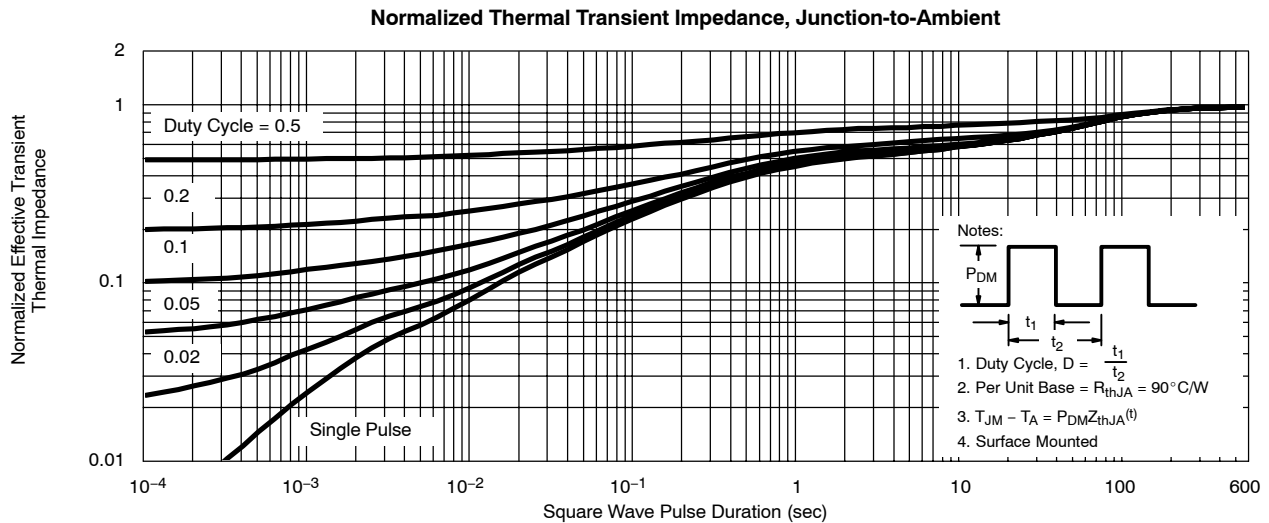
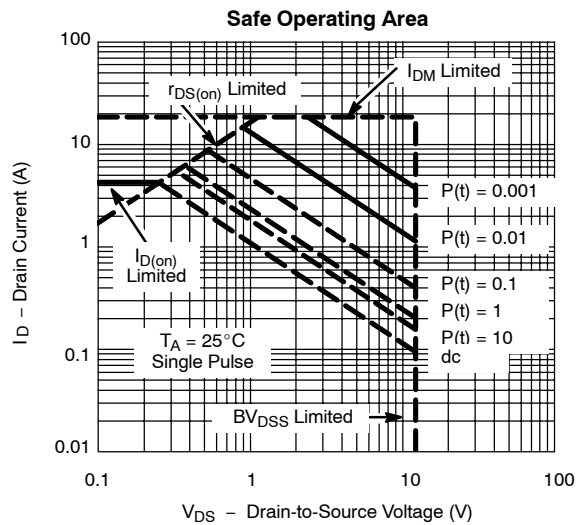
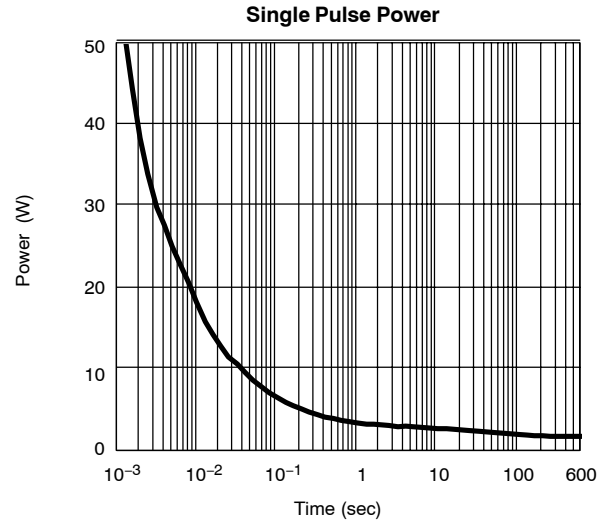
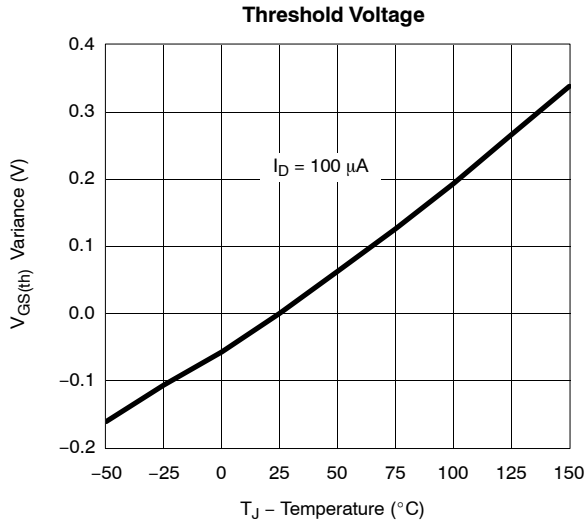
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

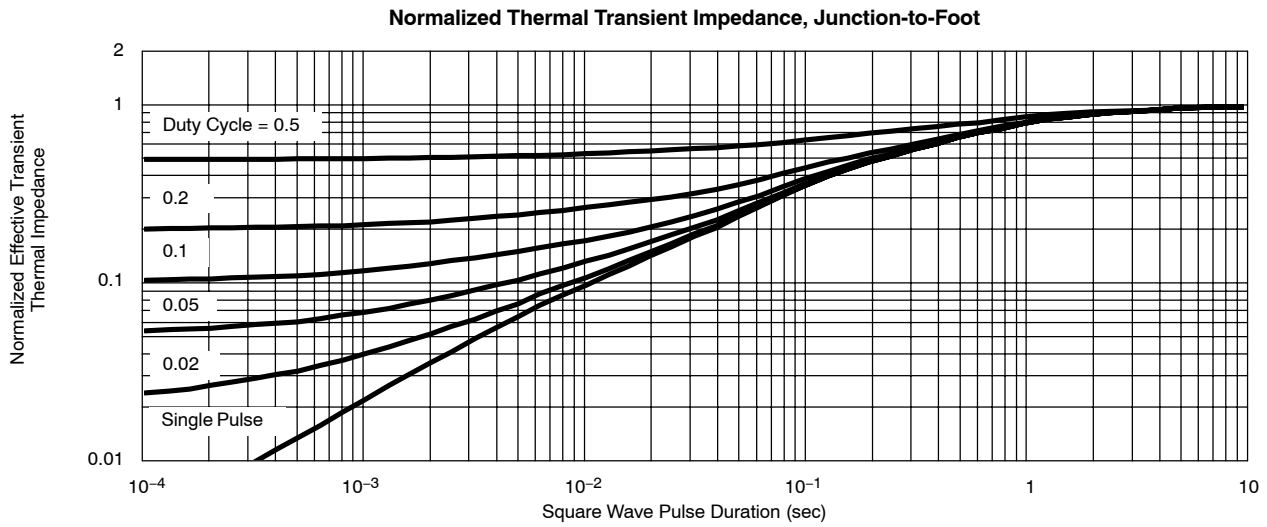


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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