



N-Channel 100-V (D-S) MOSFET

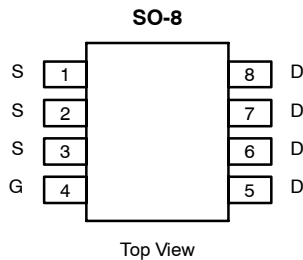
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
100	0.025 @ $V_{GS} = 10$ V	7.7
	0.031 @ $V_{GS} = 6.0$ V	6.9

FEATURES

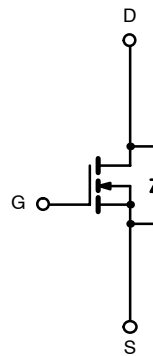
- TrenchFET® Power MOSFET
- Low Gate Charge
- 100% R_g Tested

APPLICATIONS

- Primary Side Switch



Ordering Information: Si4496DY
Si4496DY-T1 (with Tape and Reel)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	100		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	$T_A = 25^\circ\text{C}$	I_D	7.7	4.6	A
	$T_A = 70^\circ\text{C}$		6.2	4.1	
Pulsed Drain Current		I_{DM}	30		
Single Avalanch Current	L = 0.1 mH	I_{AS}	35		
Single Avalanch Energy		E_{AS}	61		mJ
Continuous Source Current (Diode Conduction) ^a		I_S	2.6	1.2	A
Maximum Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	3.1	1.4	W
	$T_A = 70^\circ\text{C}$		2.0	0.9	
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	$t \leq 10$ sec	R_{thJA}	33	40	$^\circ\text{C/W}$
	Steady State		73	90	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	15	18	

Notes

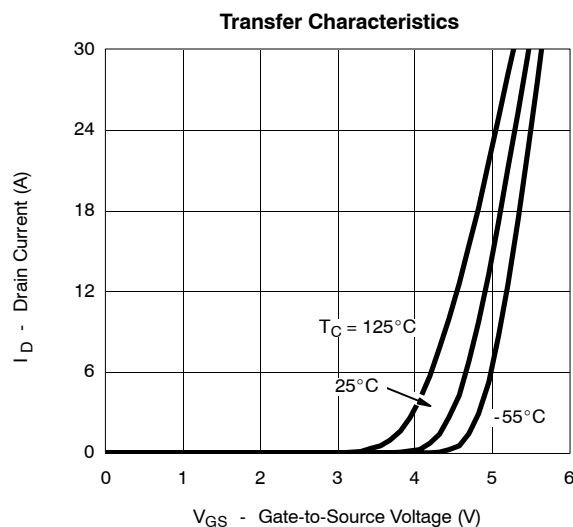
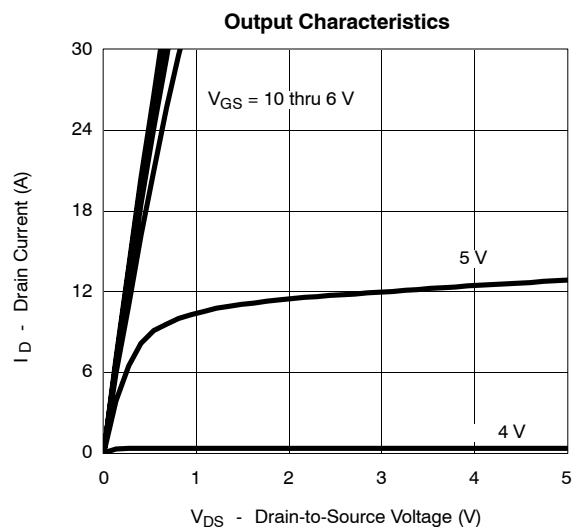
a. Surface Mounted on 1" x 1" FR4 Board.

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	2.0			V
Linear Threshold Voltage	V _T			4.4		V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80 V, V _{GS} = 0 V			1	μA
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 55 °C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 7.7 A		0.021	0.025	Ω
		V _{GS} = 6.0 V, I _D = 6.9 A		0.025	0.031	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 7.7 A		23		S
Diode Forward Voltage ^a	V _{SD}	I _S = 2.6 A, V _{GS} = 0 V		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 7.7 A		29	36	nC
Gate-Source Charge	Q _{gs}			9.9		
Gate-Drain Charge	Q _{gd}			10.3		
Gate Resistance	R _G		0.5	1.2	1.8	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50 V, R _L = 50 Ω I _D ≅ 1.0 A, V _{GEN} = 10 V, R _G = 6 Ω		17	26	ns
Rise Time	t _r			13	20	
Turn-Off Delay Time	t _{d(off)}			36	54	
Fall Time	t _f			26	40	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 2.6 A, di/dt = 100 A/μs		45	68	

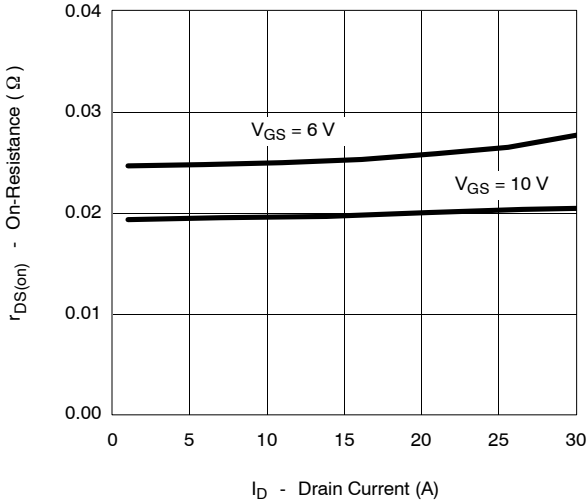
Notes

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

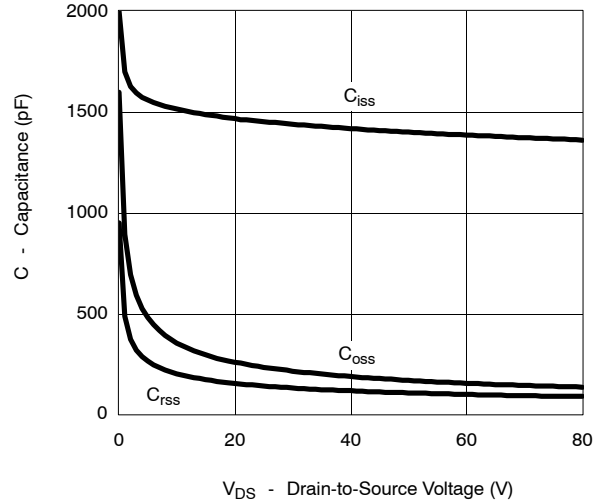
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

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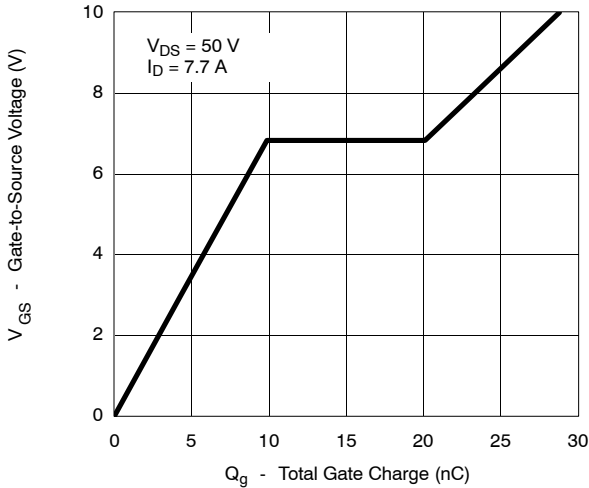
On-Resistance vs. Drain Current



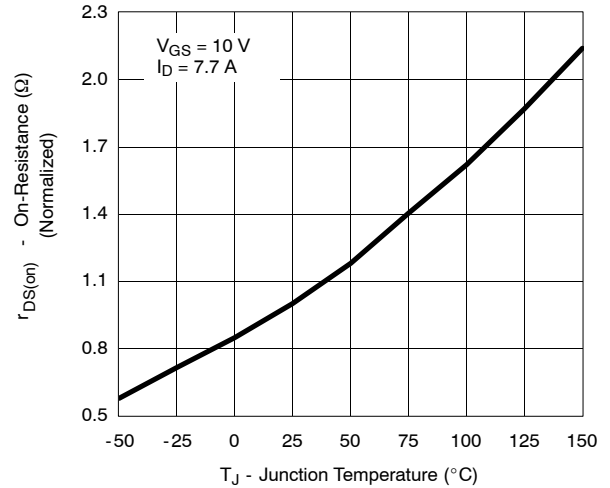
Capacitance



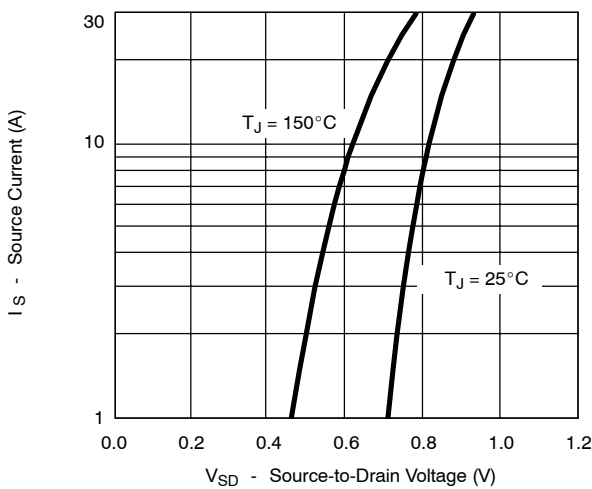
Gate Charge



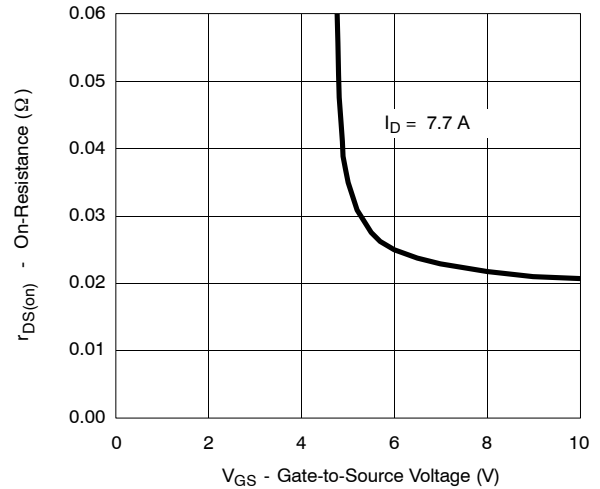
On-Resistance vs. Junction Temperature



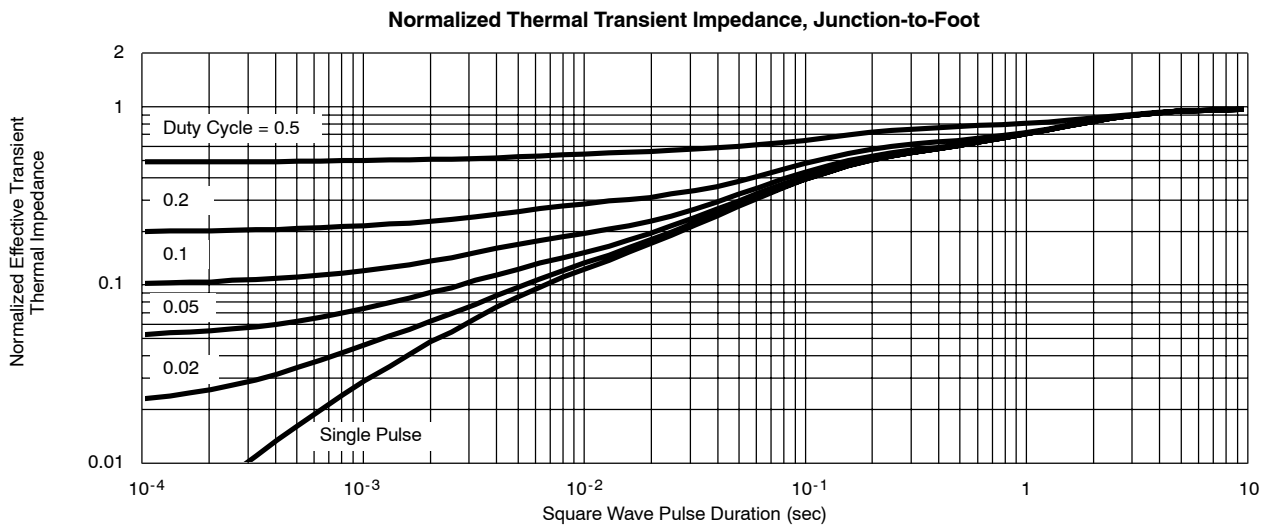
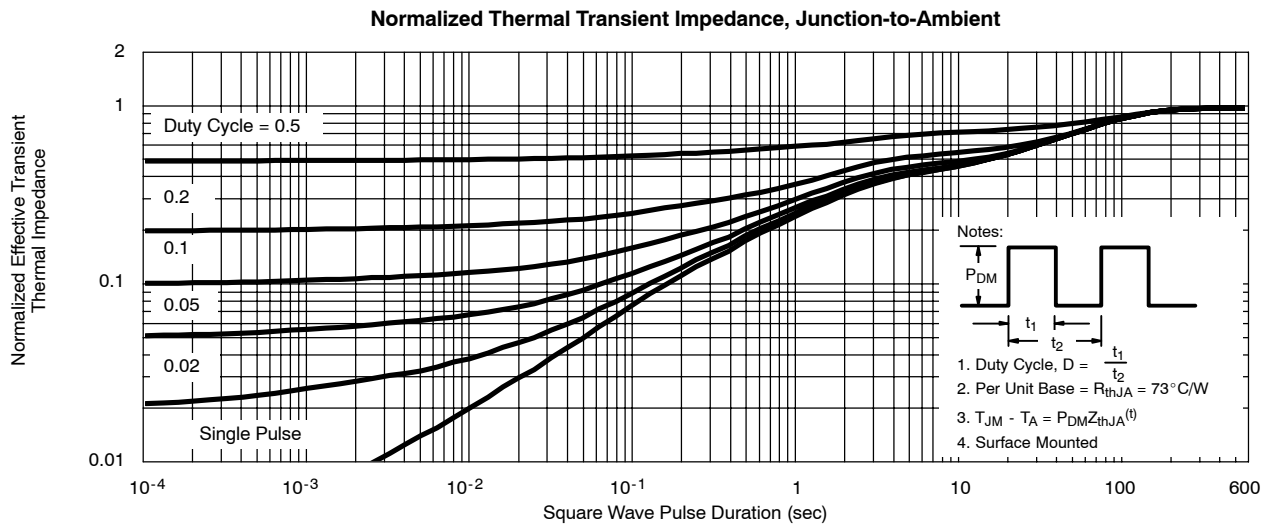
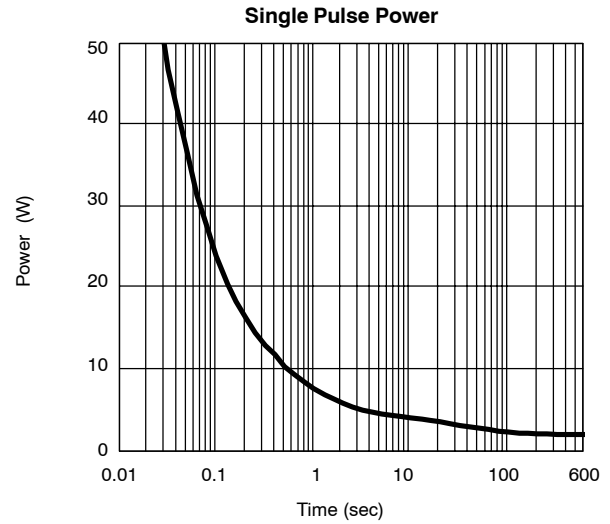
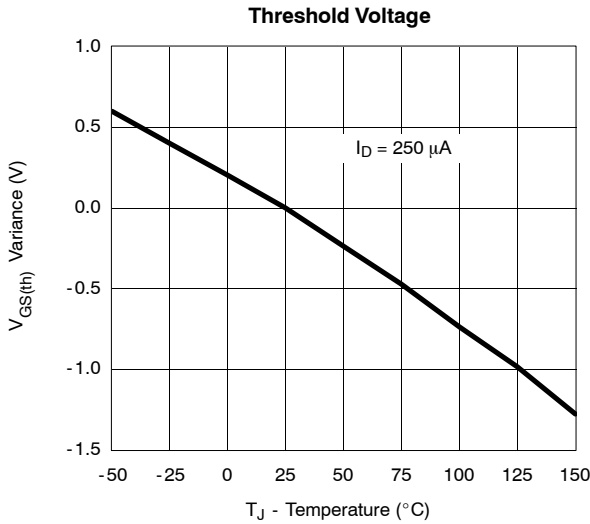
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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