

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

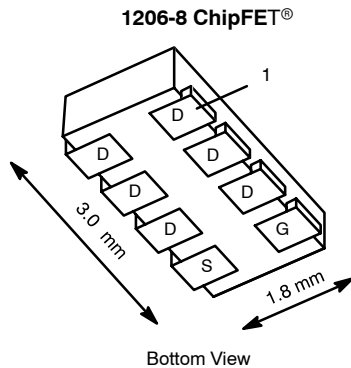
PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
-12	0.027 @ V <sub>GS</sub> = -4.5 V	-8.1
	0.0335 @ V <sub>GS</sub> = -2.5 V	-7.3
	0.045 @ V <sub>GS</sub> = -1.8 V	-6.3

### FEATURES

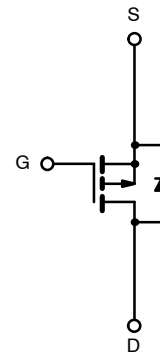
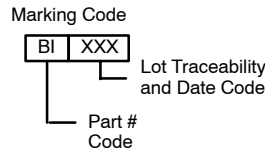
- TrenchFET® Power MOSFETS
- Low r<sub>DS(on)</sub> and Excellent Power Handling In Compact Footprint

### APPLICATIONS

- Battery and Load Switch for Portable Devices



Ordering Information: Si5473DC-T1



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>	-12		V
Gate-Source Voltage		V <sub>GS</sub>	±8		
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 25 °C	I <sub>D</sub>	-8.1	-5.9	A
	T <sub>A</sub> = 85 °C		-5.9	-4.3	
Pulsed Drain Current		I <sub>DM</sub>	±20		
Continuous Source Current <sup>a</sup>		I <sub>S</sub>	-2.1	-1.1	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25 °C	P <sub>D</sub>	2.5	1.3	W
	T <sub>A</sub> = 85 °C		1.3	0.7	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C
Soldering Recommendations (Peak Temperature) <sup>b, c</sup>			260		

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	t ≤ 5 sec	R <sub>thJA</sub>	40	50	°C/W
	Steady State		80	95	
Maximum Junction-to-Foot (Drain)		R <sub>thJF</sub>	15	20	

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- See Reliability Manual for profile. The ChipFET is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework Conditions: manual soldering with a soldering iron is not recommended for leadless components.

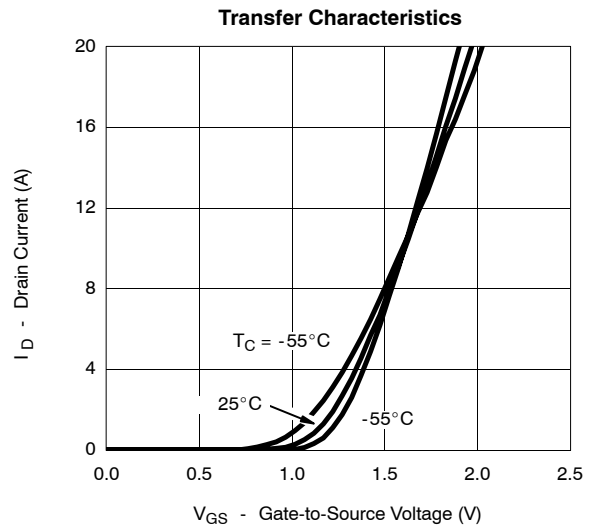
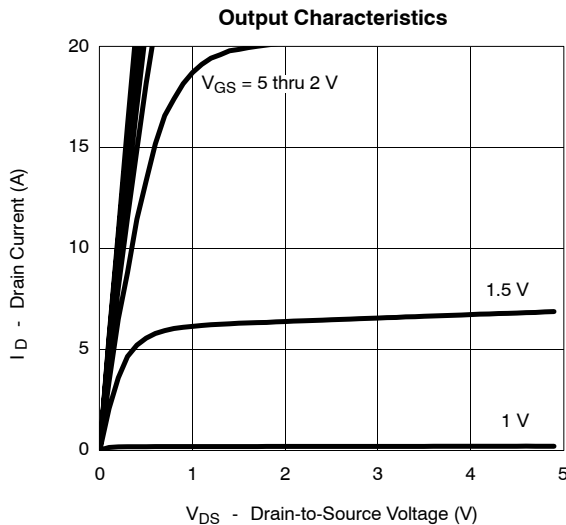


SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.40		-1.0	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -9.6 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -9.6 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C			-5	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	-20			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -5.9 A		0.022	0.027	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -5.3 A		0.028	0.0335	
		V <sub>GS</sub> = -1.8 V, I <sub>D</sub> = -2.2 A		0.036	0.045	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5 V, I <sub>D</sub> = -5.9 A		20		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = -1.1 A, V <sub>GS</sub> = 0 V		-0.8	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -6 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -5.9 A		21	32	nC
Gate-Source Charge	Q <sub>gs</sub>			3.1		
Gate-Drain Charge	Q <sub>gd</sub>			6.0		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -6 V, R <sub>L</sub> = 6 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω		25	40	ns
Rise Time	t <sub>r</sub>			50	75	
Turn-Off Delay Time	t <sub>d(off)</sub>			145	220	
Fall Time	t <sub>f</sub>			90	135	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = -1.1 A, di/dt = 100 A/μs		70	

Notes

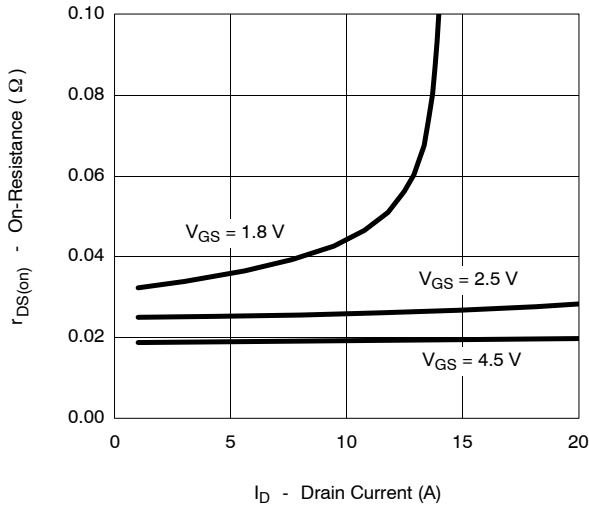
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

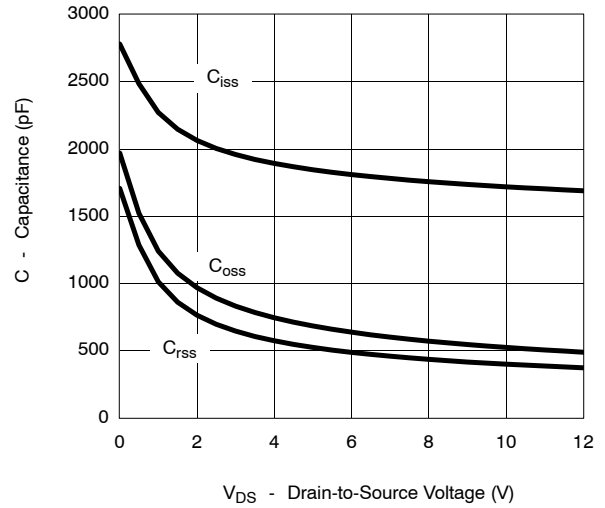


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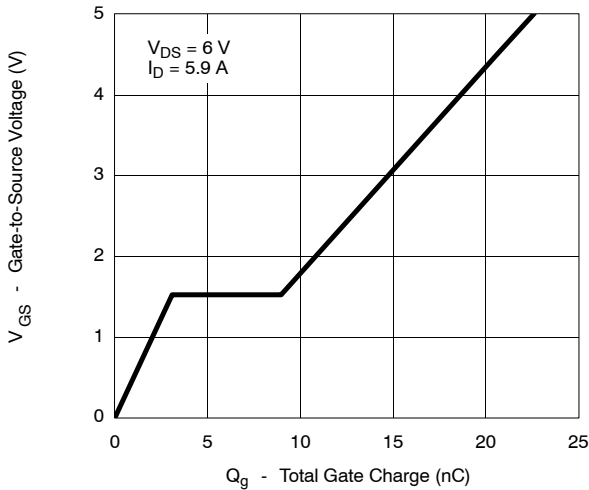
**On-Resistance vs. Drain Current**



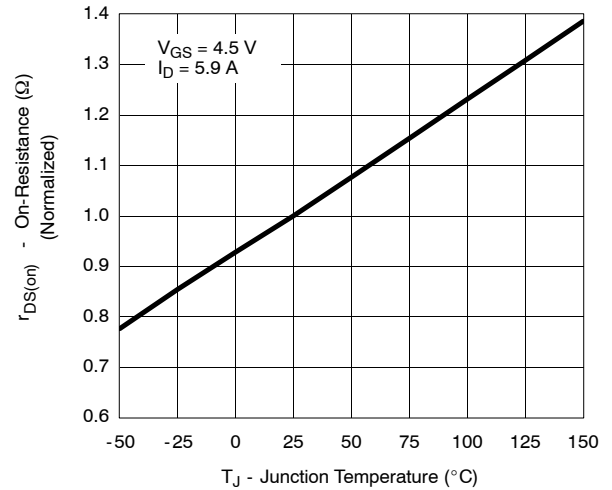
**Capacitance**



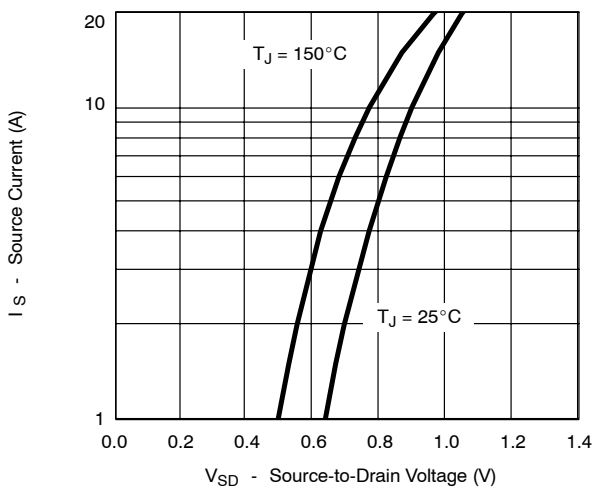
**Gate Charge**



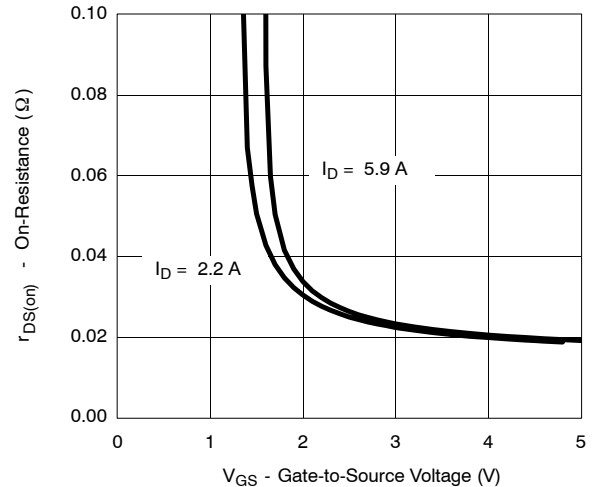
**On-Resistance vs. Junction Temperature**



**Source-Drain Diode Forward Voltage**

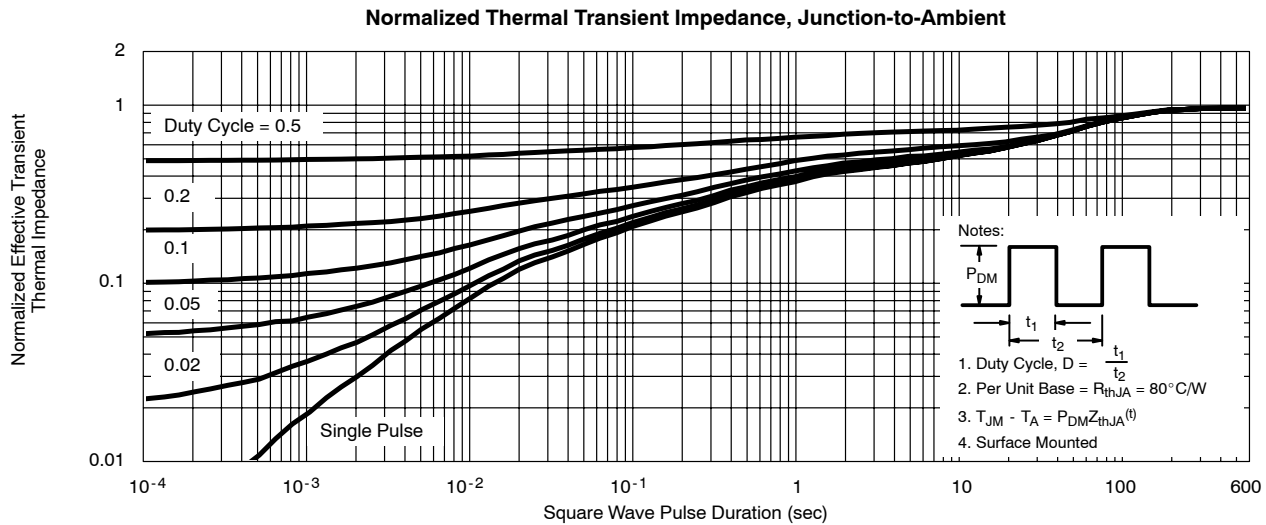
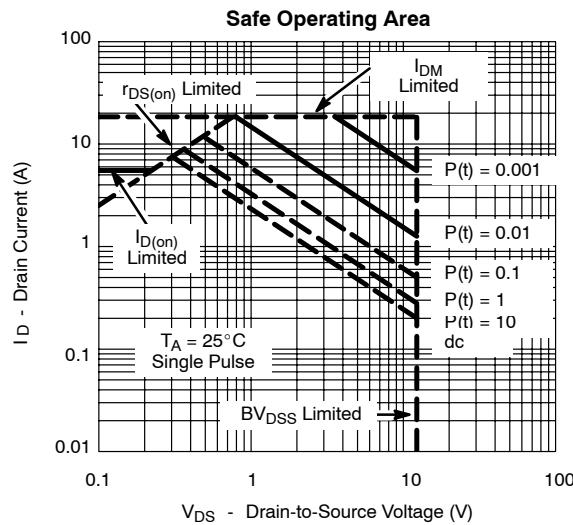
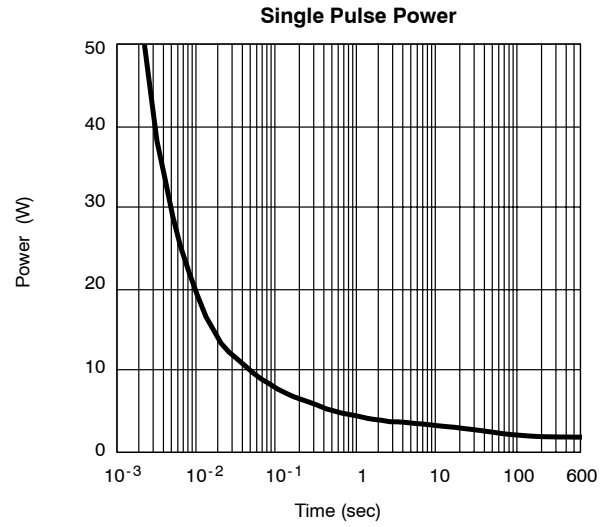
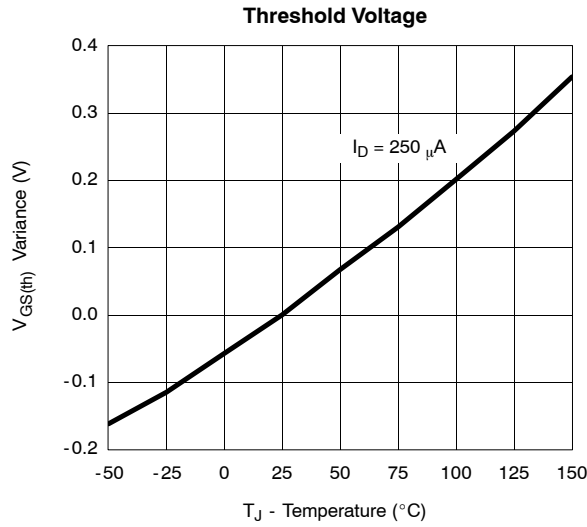


**On-Resistance vs. Gate-to-Source Voltage**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

