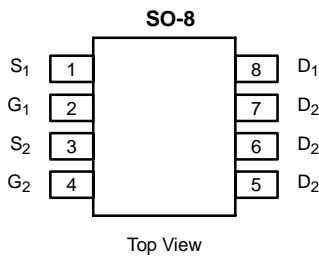
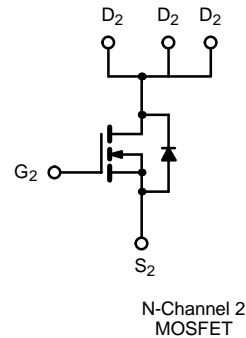
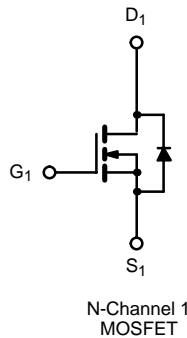


## Asymmetrical Dual N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY			
	V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
Channel-1	30	0.022 @ V <sub>GS</sub> = 10 V	6.3
		0.030 @ V <sub>GS</sub> = 4.5 V	5.4
Channel-2		0.0105 @ V <sub>GS</sub> = 10 V	11.5
		0.0145 @ V <sub>GS</sub> = 4.5 V	10



Ordering Information: Si4924DY  
Si4924DY-T1 (with Tape and Reel)



ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Channel-1		Channel-2		Unit
		10 secs	Steady State	10 secs	Steady State	
Drain-Source Voltage	V <sub>DS</sub>	30				V
Gate-Source Voltage	V <sub>GS</sub>	± 20				
Continuous Drain Current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 25 °C	6.3	5.3	11.5	8.6	A
	T <sub>A</sub> = 70 °C	5.4	4.2	9.5	6.9	
Pulsed Drain Current	I <sub>DM</sub>	30		40		A
Continuous Source Current (Diode Conduction) <sup>a</sup>	I <sub>S</sub>	1.3	0.9	2.2	1.15	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25 °C	1.4	1.0	2.4	1.25	W
	T <sub>A</sub> = 70 °C	0.9	0.64	1.5	0.80	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150				°C

THERMAL RESISTANCE RATINGS						
Parameter	Symbol	Channel-1		Channel-2		Unit
		Typ	Max	Typ	Max	
Maximum Junction-to-Ambient <sup>a</sup>	t ≤ 10 sec	72	90	43	53	°C/W
	Steady-State	100	125	82	100	
Maximum Junction-to-Foot (Drain)	Steady-State	R <sub>thJC</sub>	51	63	25	

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

MOSFET SPECIFICATIONS (T <sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	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	Ch-1	0.8		V	
			Ch-2	0.8			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 20 V	Ch-1		± 100	nA	
			Ch-2		± 100		
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V	Ch-1		1	μA	
			Ch-2		1		
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C	Ch-1		15		
			Ch-2		15		
On-State Drain Current <sup>b</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	Ch-1	20		A	
			Ch-2	30			
Drain-Source On-State Resistance <sup>b</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 6.3 A	Ch-1		0.018	0.022	Ω
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 11.5 A	Ch-2		0.0088	0.0105	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 5.4 A	Ch-1		0.024	0.030	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 10 A	Ch-2		0.0115	0.0145	
Forward Transconductance <sup>b</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 6.3 A	Ch-1		17	S	
		V <sub>DS</sub> = 15 V, I <sub>D</sub> = 11.5 A	Ch-2		30		
Diode Forward Voltage <sup>b</sup>	V <sub>SD</sub>	I <sub>S</sub> = 1.3 A, V <sub>GS</sub> = 0 V	Ch-1		0.7	1.1	V
		I <sub>S</sub> = 2.2 A, V <sub>GS</sub> = 0 V	Ch-2		0.72	1.1	
<b>Dynamic<sup>a</sup></b>							
Total Gate Charge	Q <sub>g</sub>	Channel-1 V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 5 V, I <sub>D</sub> = 6.3 A  Channel-2 V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 5 V, I <sub>D</sub> = -11.5 A	Ch-1		8.0	12	nC
			Ch-2		25.5	35	
Gate-Source Charge	Q <sub>gs</sub>		Ch-1		1.75		
			Ch-2		4.5		
Gate-Drain Charge	Q <sub>gd</sub>		Ch-1		3.2		
			Ch-2		11.5		
Gate Resistance	R <sub>g</sub>	Ch-1	1.5		6.1	Ω	
		Ch-2	0.5		2.4		
Turn-On Delay Time	t <sub>d(on)</sub>	Channel-1 V <sub>DD</sub> = 15 V, R <sub>L</sub> = 15 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω  Channel-2 V <sub>DD</sub> = 15 V, R <sub>L</sub> = 15 Ω I <sub>D</sub> ≅ 1 A, V <sub>GEN</sub> = 10 V, R <sub>G</sub> = 6 Ω	Ch-1		10	20	ns
Rise Time	t <sub>r</sub>		Ch-2		15	30	
			Ch-1		5	10	
Turn-Off Delay Time	t <sub>d(off)</sub>		Ch-2		11	20	
			Ch-1		26	50	
Fall Time	t <sub>f</sub>		Ch-2		58	100	
			Ch-1		8	16	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = 1.3 A, di/dt = 100 A/μs	Ch-1		30	
		I <sub>F</sub> = 2.2 A, di/dt = 100 μA/μs	Ch-2		42	70	

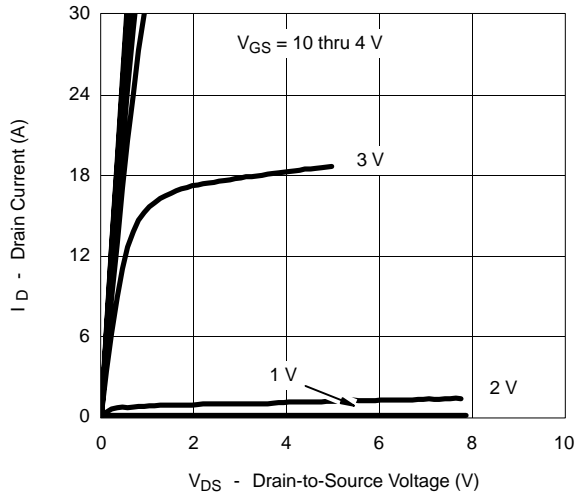
## Notes

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

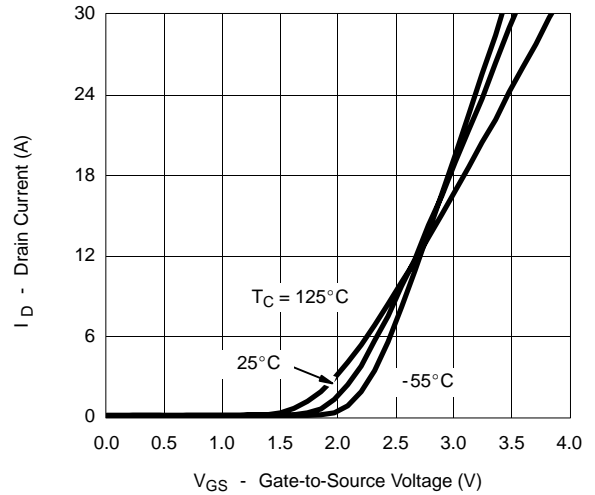
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)**

**CHANNEL-1**

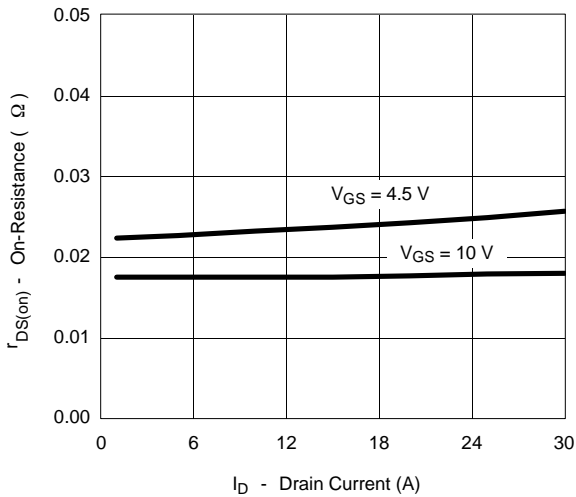
**Output Characteristics**



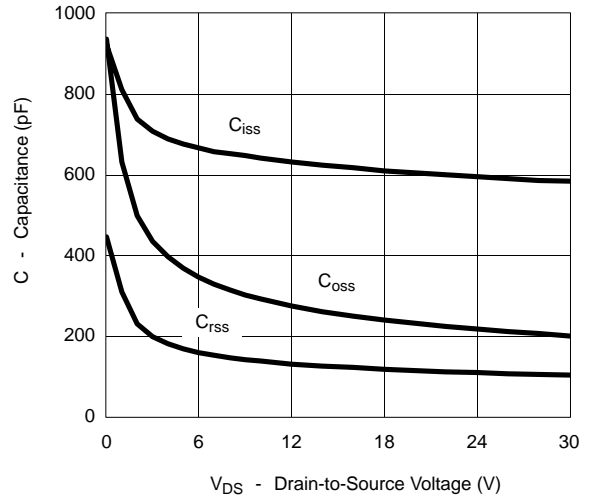
**Transfer Characteristics**



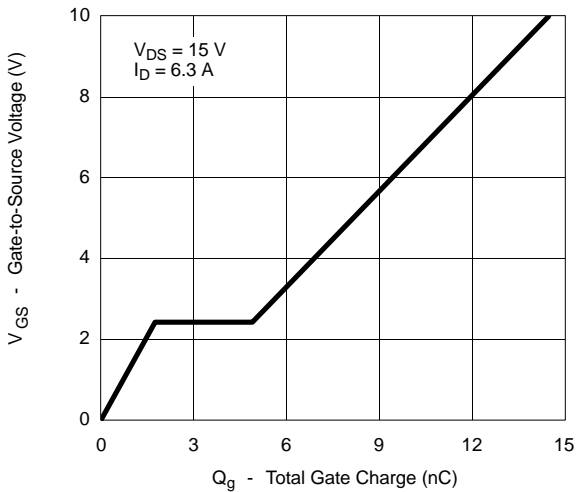
**On-Resistance vs. Drain Current**



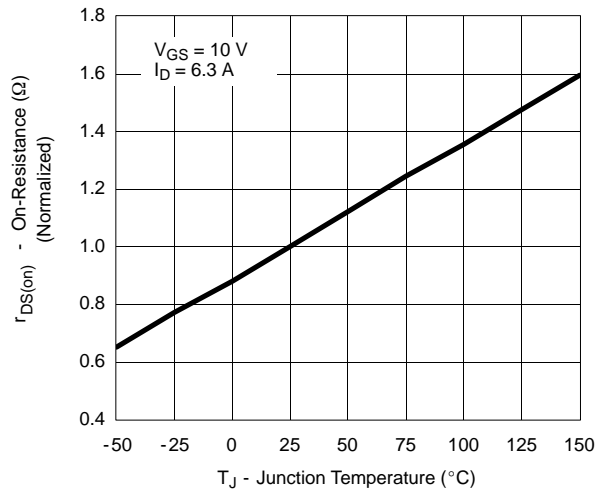
**Capacitance**



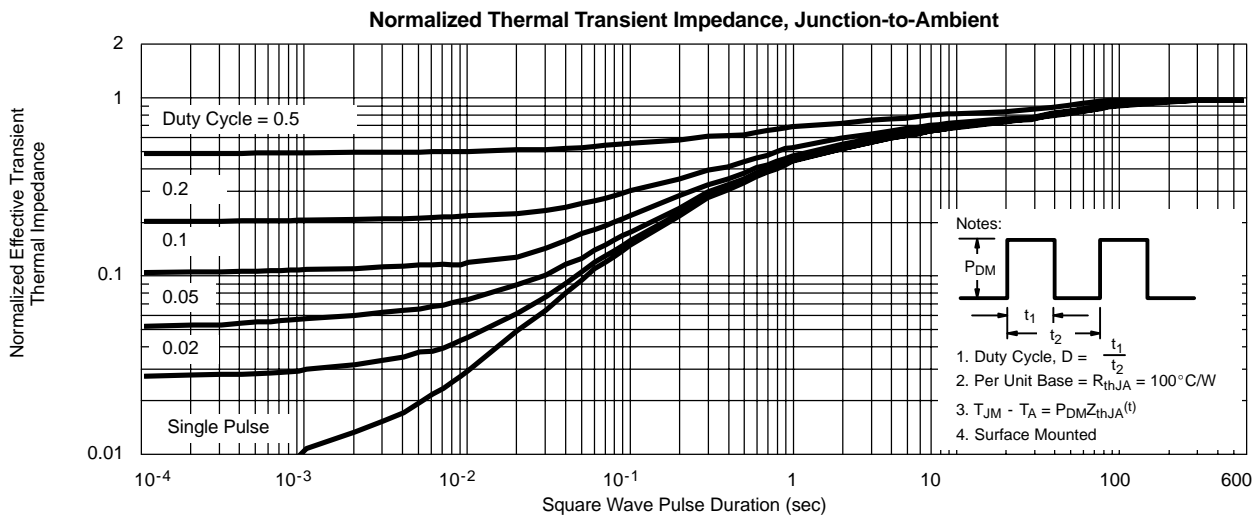
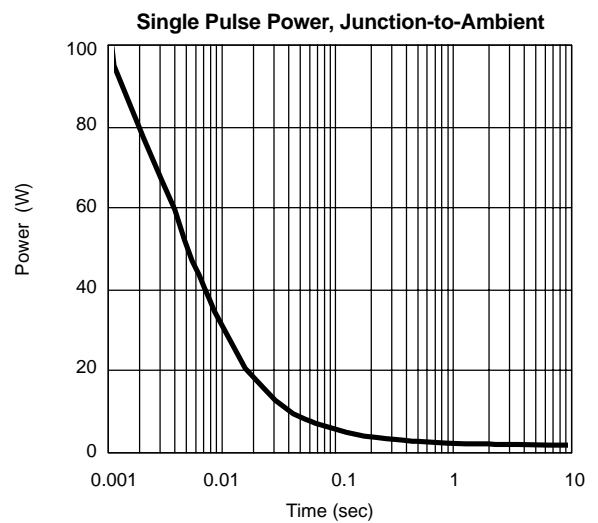
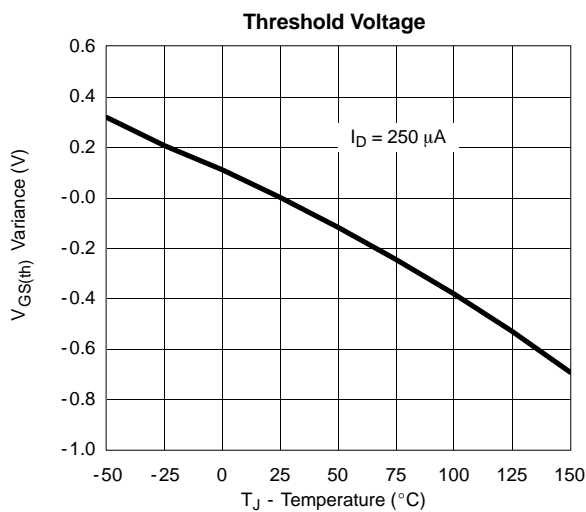
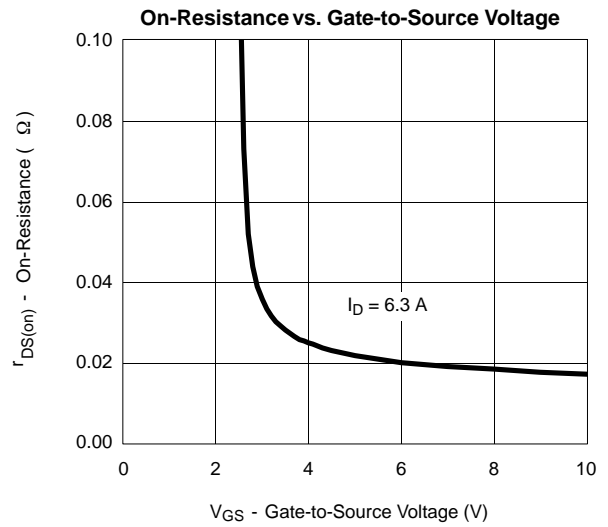
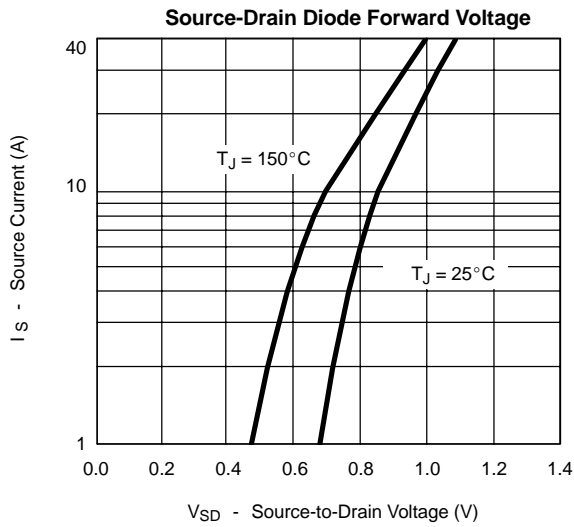
**Gate Charge**



**On-Resistance vs. Junction Temperature**



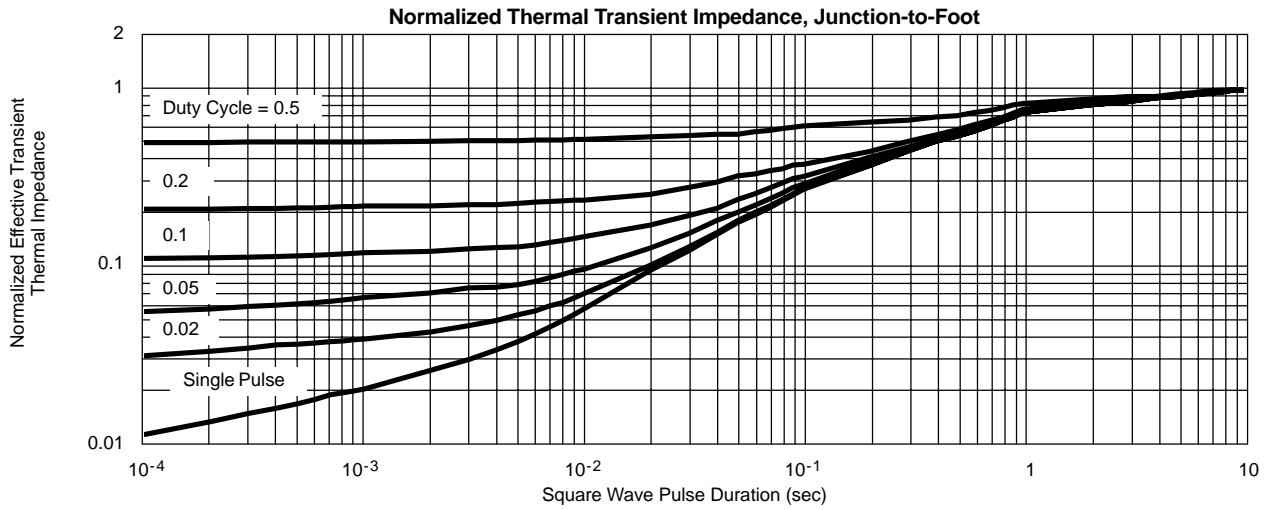
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL-1**





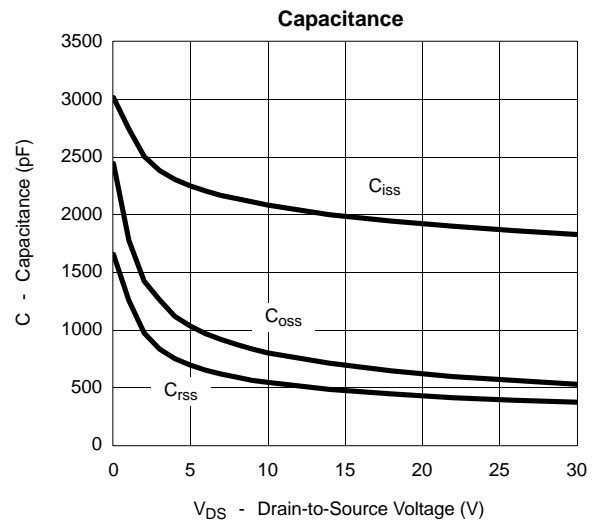
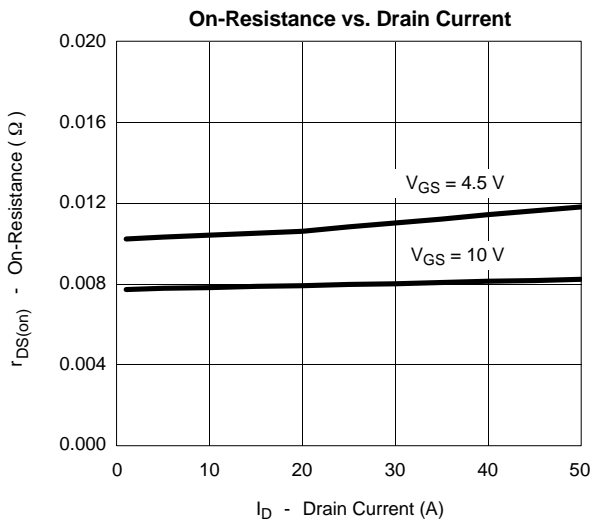
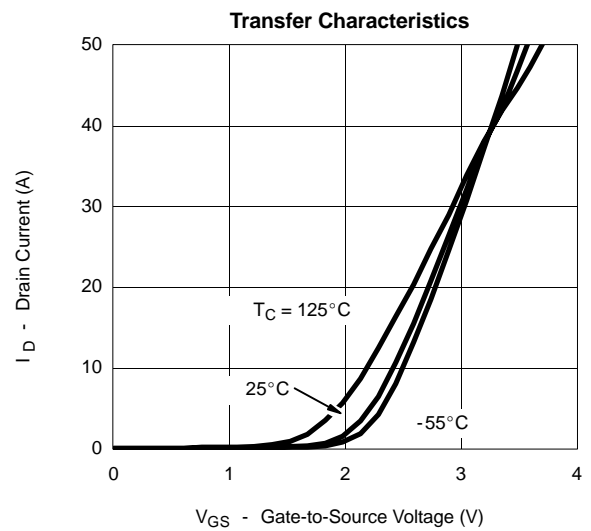
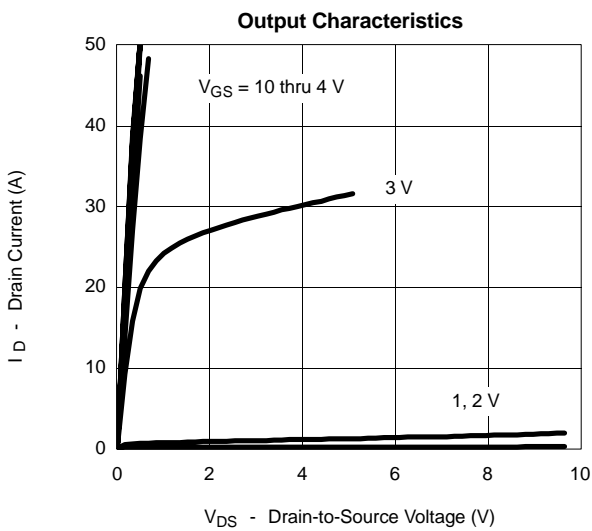
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**CHANNEL-1**

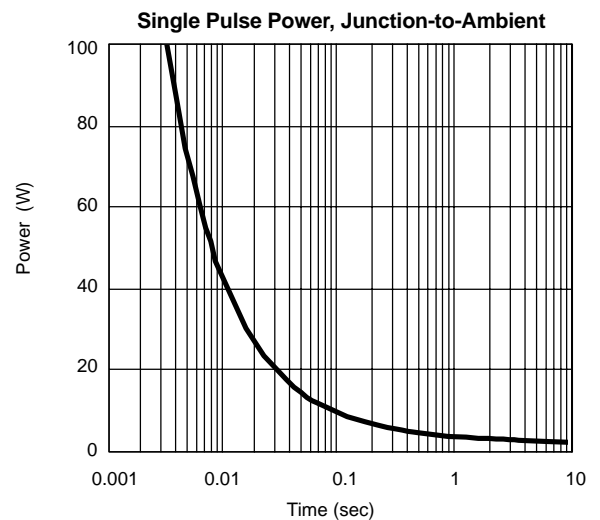
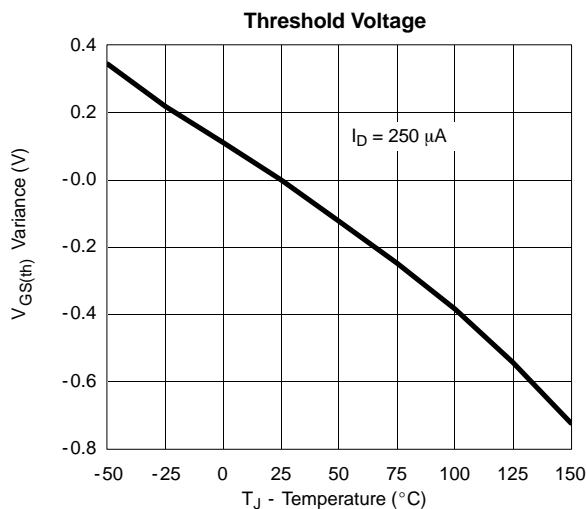
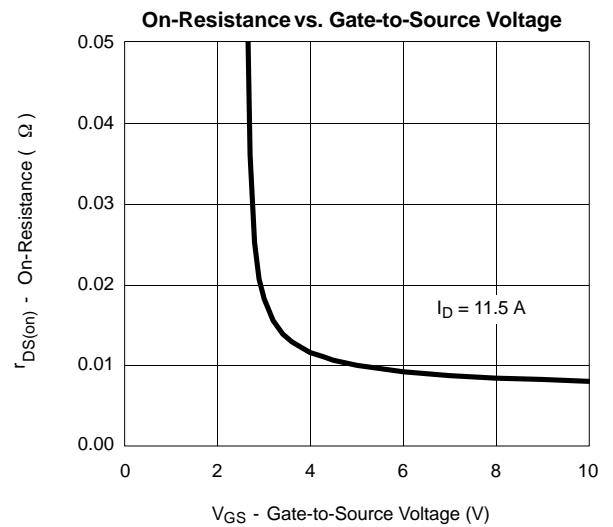
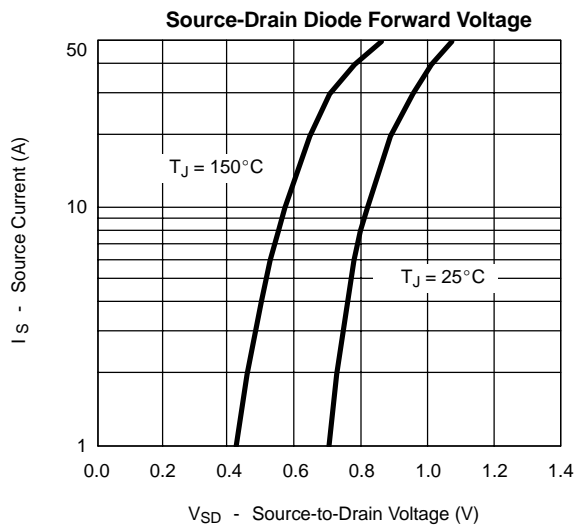
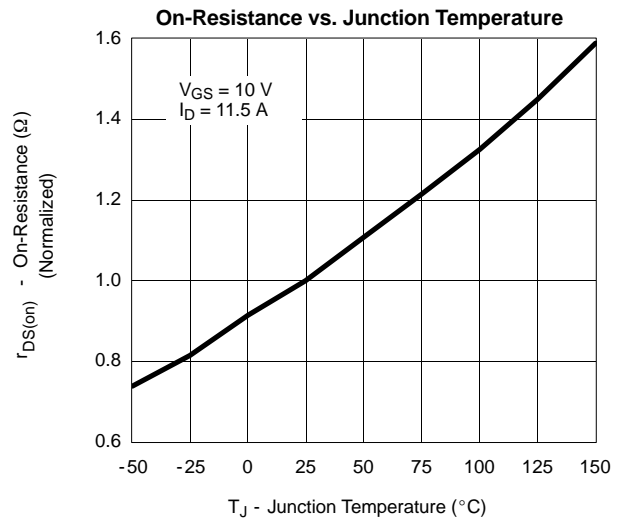
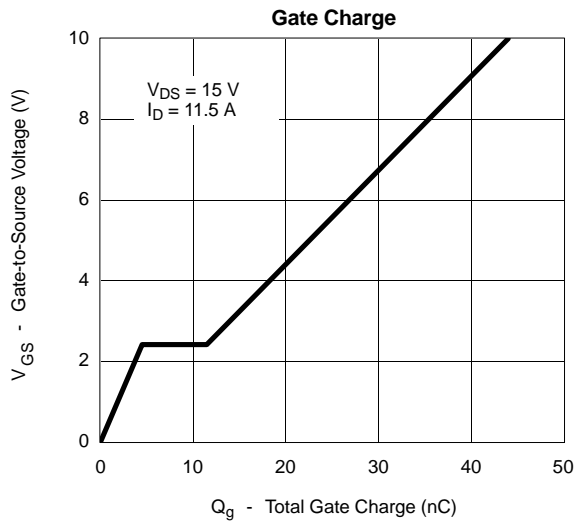


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

**CHANNEL-2**

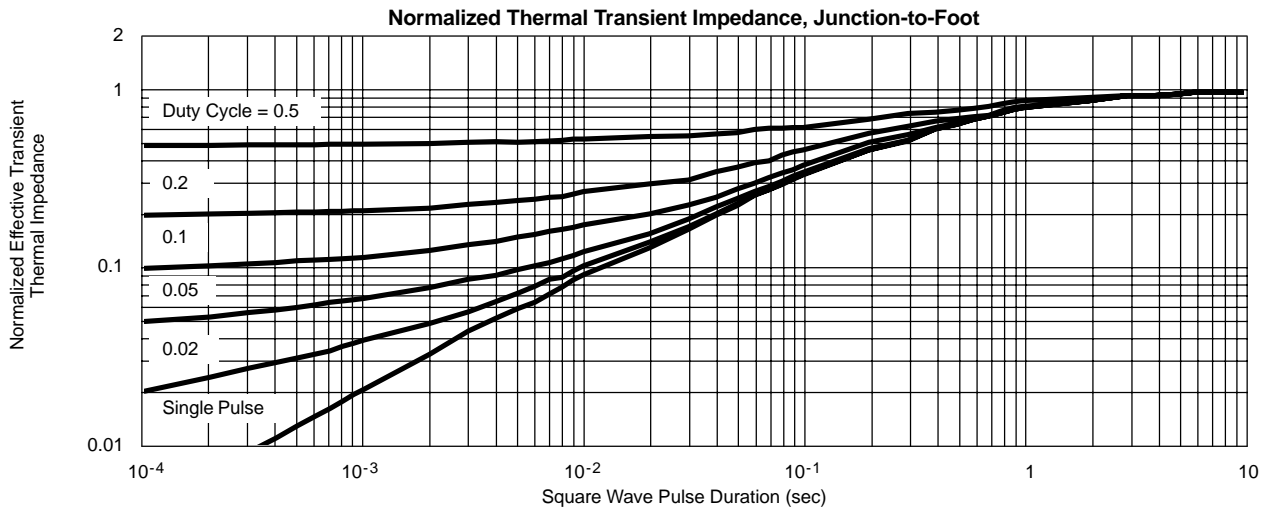
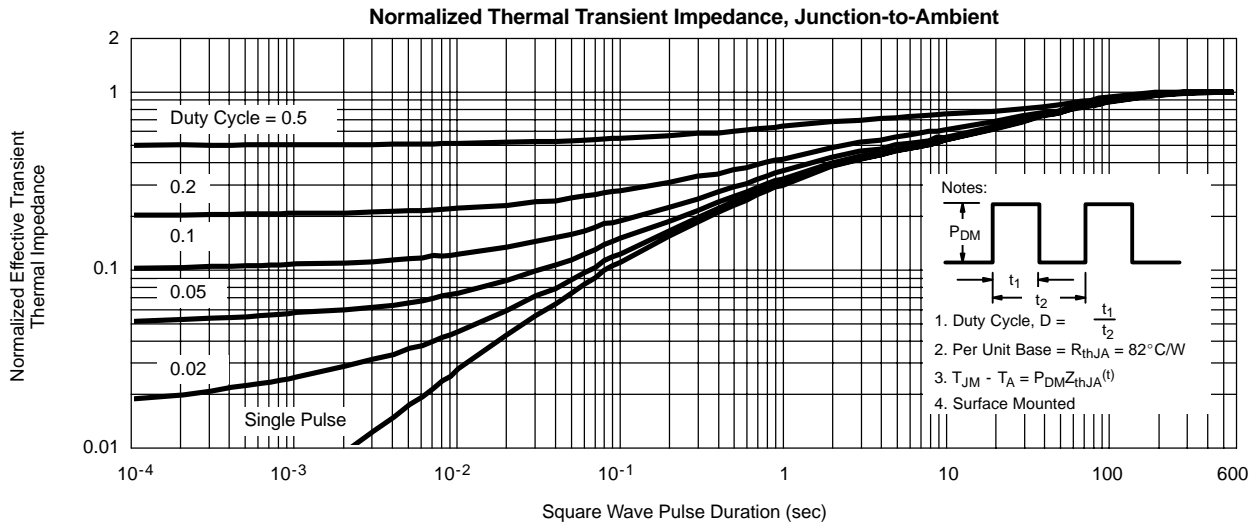


**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED) CHANNEL-2**



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

**CHANNEL-2**





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