



Assymetrical Dual P-Channel 30-V/20-V (D-S) MOSFETs

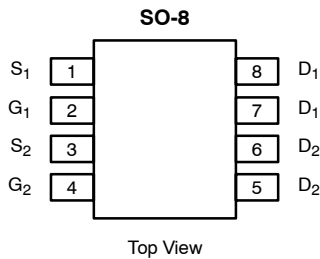
PRODUCT SUMMARY			
	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
Channel-1	-30	0.054 @ V _{GS} = -10 V	-5.0
		0.100 @ V _{GS} = -4.5 V	-3.7
Channel-2	-20	0.027 @ V _{GS} = -4.5 V	-7.0
		0.035 @ V _{GS} = -2.5 V	-6.2
		0.048 @ V _{GS} = -1.8 V	-5.2

FEATURES

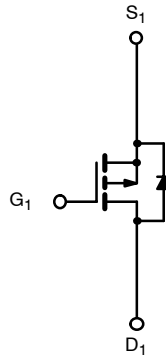
- TrenchFET® Power MOSFETs
- Low Gate Drive (2.5 V) Capability For Channel 2

APPLICATIONS

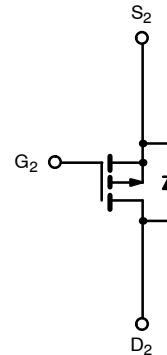
- Game Station
 - Load Switch



Ordering Information: Si4955DY—E3
Si4955DY-T1—E3 (with Tape and Reel)



P-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Channel-1		Channel-2		Unit
		10 secs	Steady State	10 secs	Steady State	
Drain-Source Voltage	V _{DS}	-30		-20		V
Gate-Source Voltage	V _{GS}	±20		±8		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	-5.0	-3.8	-7.0	-5.3	A
	T _A = 70°C	-4.0	-3.0	-5.6	-4.2	
Pulsed Drain Current	I _{DM}	-20				
Continuous Source Current (Diode Conduction) ^a	I _S	-1.7	-0.9	-1.7	-0.9	
Maximum Power Dissipation ^a	T _A = 25°C	2.0	1.1	2	1.1	W
	T _A = 70°C	1.3	0.7	1.3	0.7	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150				°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Channel-1		Channel-2		Unit
		Typ	Max	Typ	Max	
Maximum Junction-to-Ambient ^a	t ≤ 10 sec	55	62.5	58	62.5	°C/W
	Steady State	90	110	91	110	
Maximum Junction-to-Foot (Drain)	Steady State	33	40	34	40	

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	Ch 1	-1.0		-3	V
		V _{DS} = V _{GS} , I _D = -250 μA	Ch 2	-0.4		-1	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V	Ch 1			±100	nA
		V _{DS} = 0 V, V _{GS} = ±8 V	Ch 2			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V	Ch 1			-1	μA
		V _{DS} = -16 V, V _{GS} = 0 V	Ch 2			-1	
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 85 °C	Ch 1			-5	
		V _{DS} = -16 V, V _{GS} = 0 V, T _J = 85 °C	Ch 2			-5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ -5 V, V _{GS} = -10 V	Ch 1	-20			A
		V _{DS} ≤ -5 V, V _{GS} = -10 V	Ch 2	-20			
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -10 V, I _D = -5.0 A	Ch 1		0.044	0.054	Ω
		V _{GS} = -4.5 V, I _D = -7.0 A	Ch 2		0.022	0.027	
		V _{GS} = -4.5 V, I _D = -3.7 A	Ch 1		0.082	0.100	
		V _{GS} = -2.5 V, I _D = -6.2 A	Ch 2		0.029	0.035	
		V _{GS} = -1.8 V, I _D = -3 A	Ch 2		0.039	0.048	
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -5.0 A	Ch 1		10		S
		V _{DS} = -15 V, I _D = -3 A	Ch 2		25		
Diode Forward Voltage ^a	V _{SD}	I _S = -1.7 A, V _{GS} = 0 V	Ch 1		-0.80	-1.2	V
		I _S = -1.7 A, V _{GS} = 0 V	Ch 2		-0.80	-1.2	
Dynamic^b							
Total Gate Charge	Q _g	Channel-1 V _{DS} = -15 V, V _{GS} = -10 V, I _D = -5.0 A Channel-2 V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -7 A	Ch 1		12.5	19	nC
			Ch 2		21	25	
Gate-Source Charge	Q _{gs}		Ch 1		2.1		
			Ch 2		2.6		
Gate-Drain Charge	Q _{gd}		Ch 1		3.5		
			Ch 2		6.0		
Turn-On Delay Time	t _{d(on)}	Ch 1		7	15	ns	
		Ch 2		20	30		
Rise Time	t _r	Channel-1 V _{DD} = -15 V, R _L = -15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω	Ch 1		10		15
		Ch 2		40	60		
Turn-Off Delay Time	t _{d(off)}	Channel-2 V _{DD} = -10 V, R _L = 10 Ω I _D ≅ -1 A, V _{GEN} = -4.5 V, R _G = 6 Ω	Ch 1		30		45
		Ch 2		125	190		
Fall Time	t _f	Ch 1		22	35		
		Ch 2		85	130		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -1.7 A, di/dt = 100 A/μs	Ch 1		25	60	
		I _F = -1.7 A, di/dt = 100 A/μs	Ch 2		64	90	

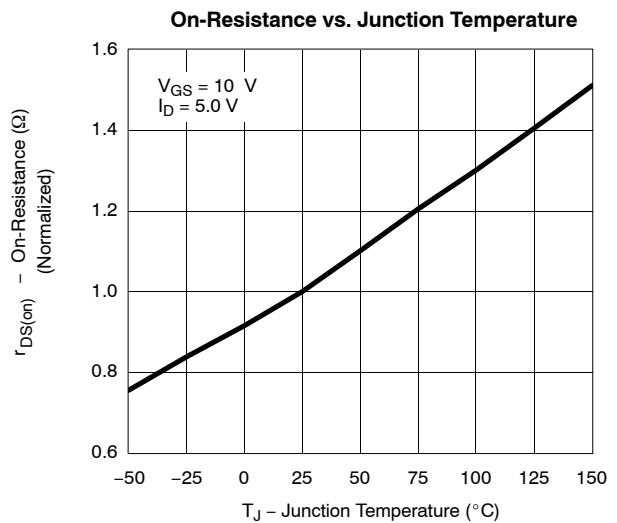
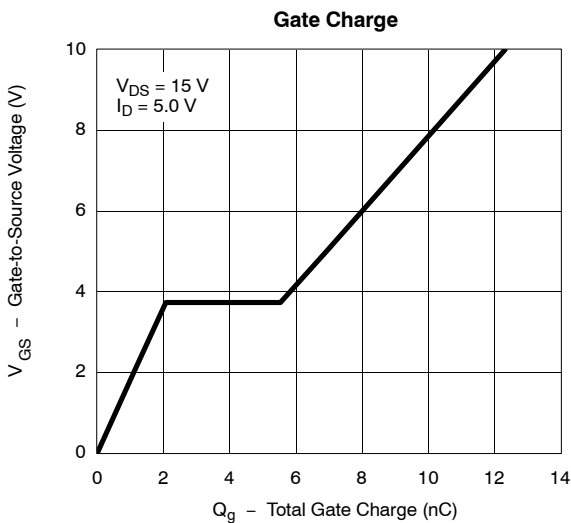
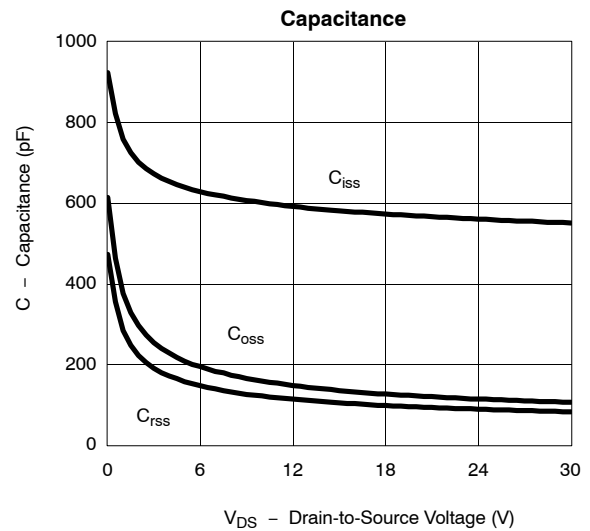
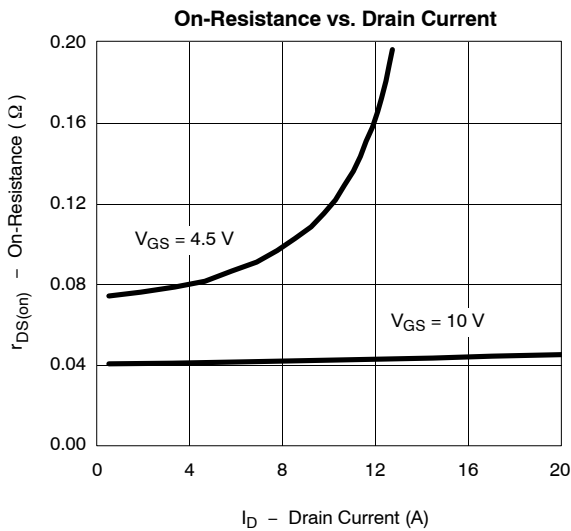
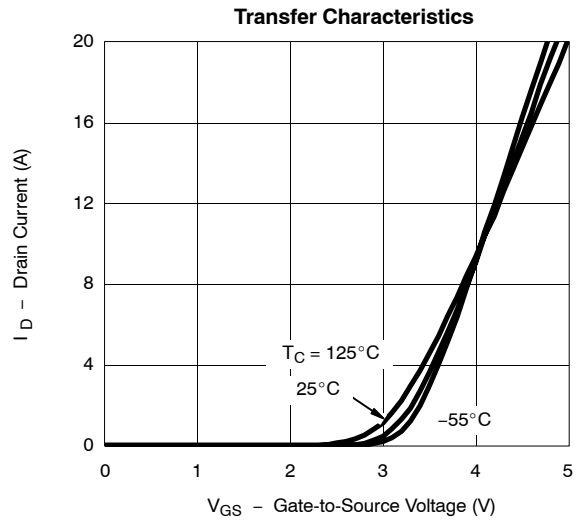
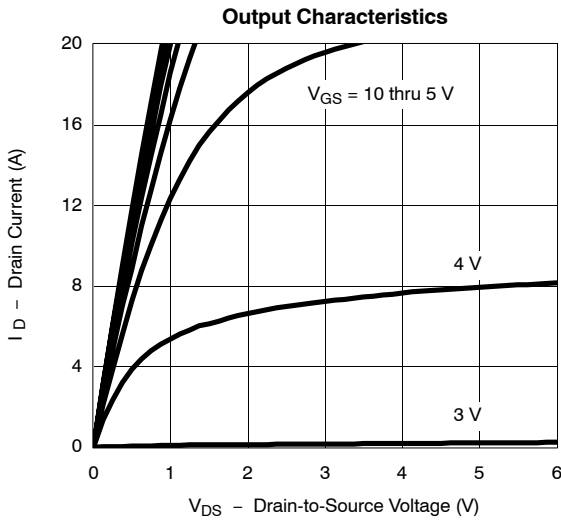
Notes

- 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)

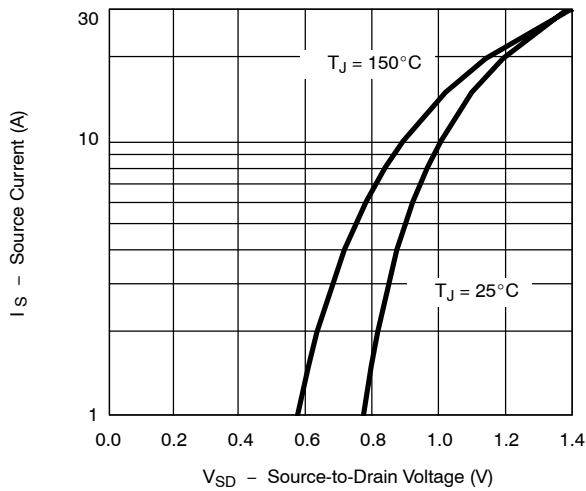
CHANNEL 1



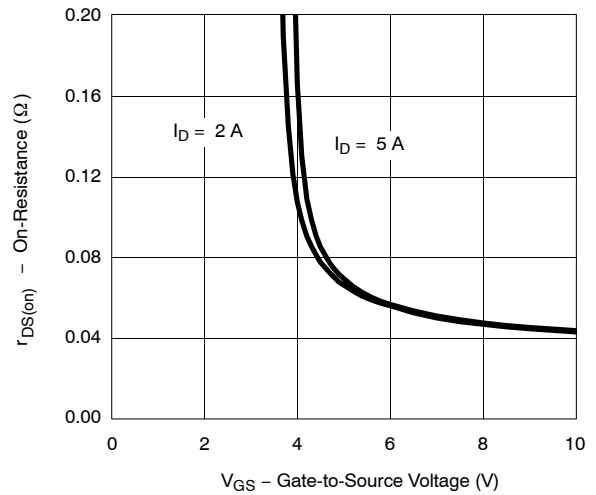


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 1

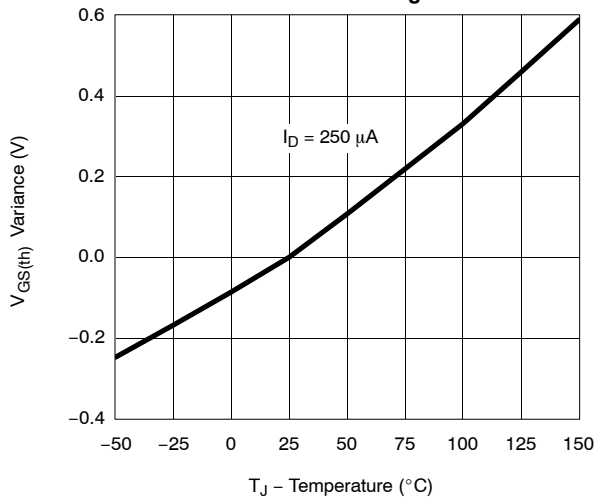
Source-Drain Diode Forward Voltage



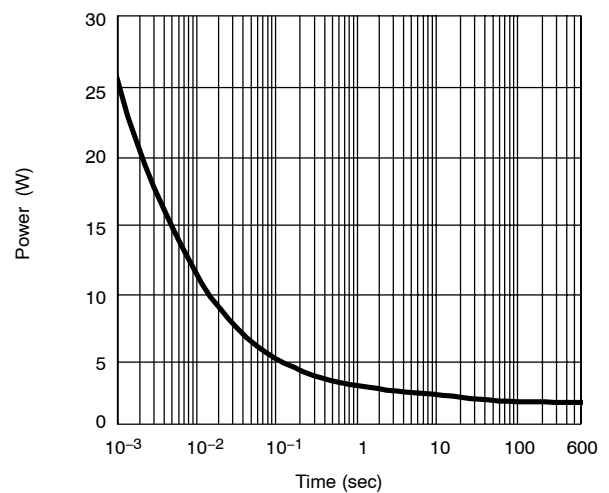
On-Resistance vs. Gate-to-Source Voltage



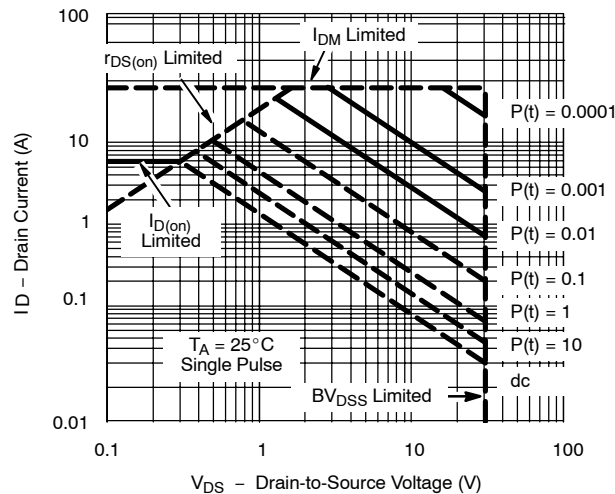
Threshold Voltage



Single Pulse Power



Safe Operating Area

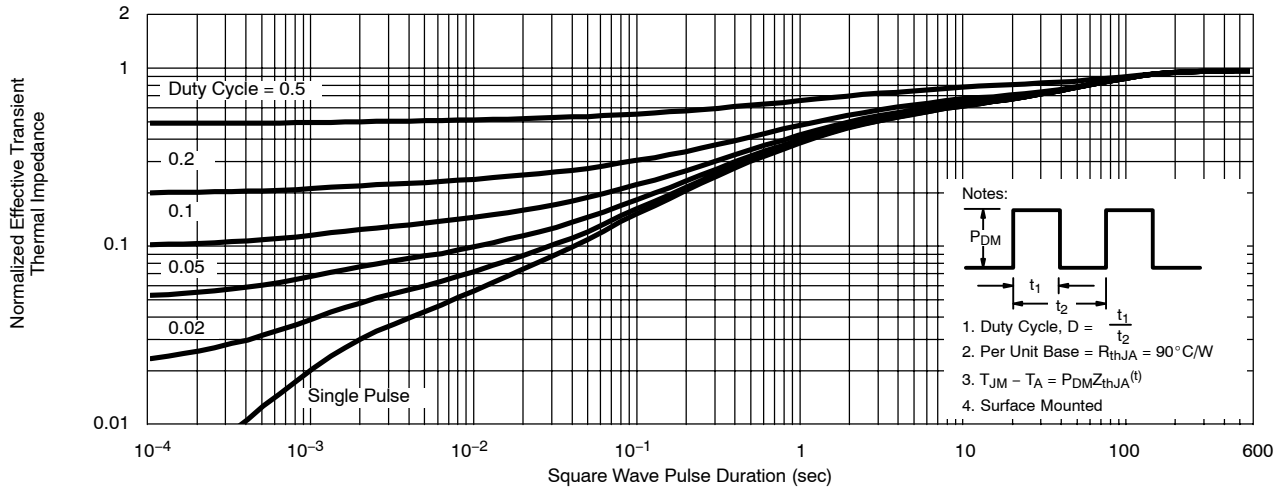




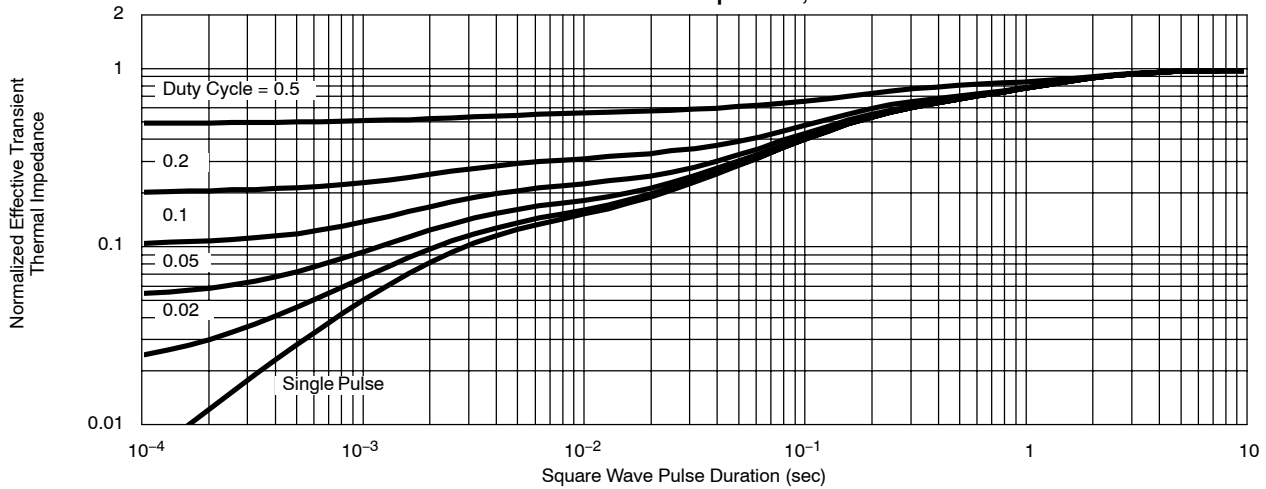
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL 1

Normalized Thermal Transient Impedance, Junction-to-Ambient



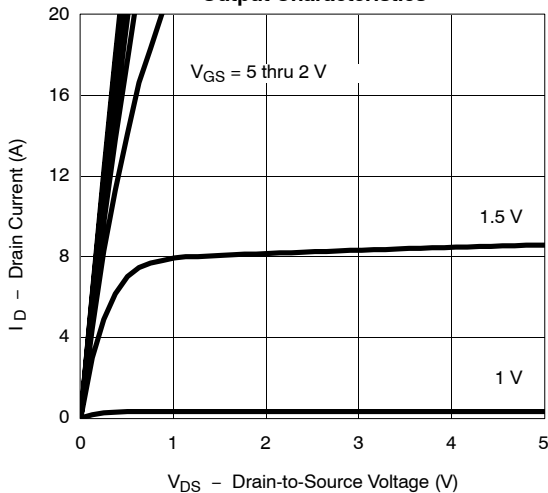
Normalized Thermal Transient Impedance, Junction-to-Foot



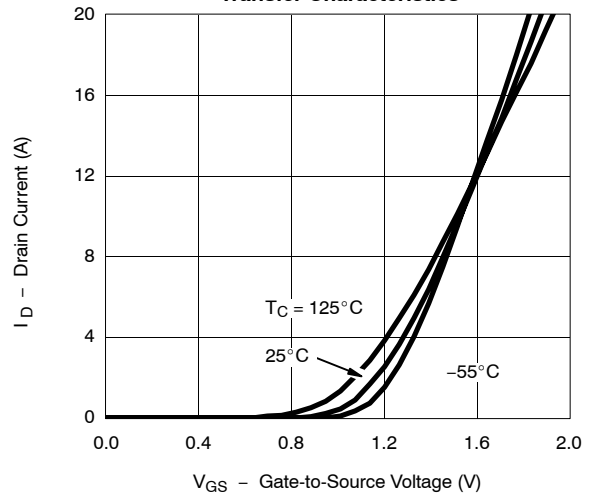
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL 2

Output Characteristics



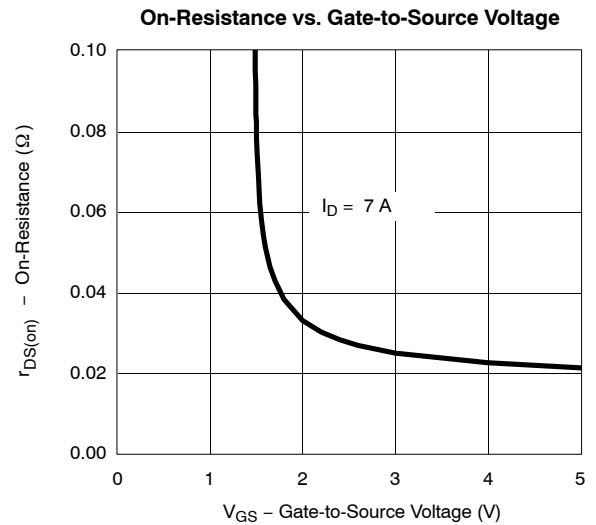
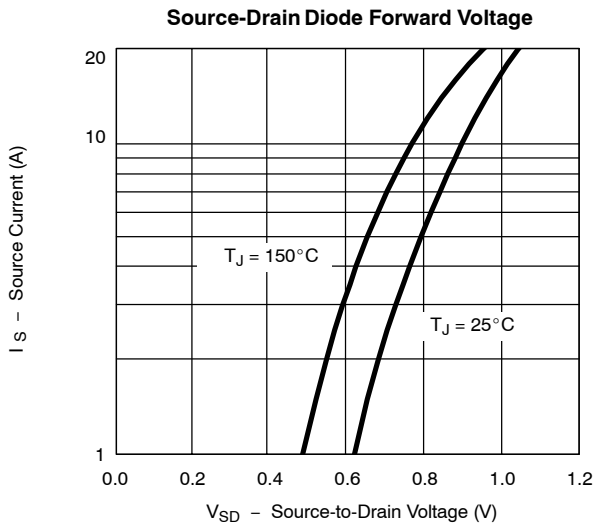
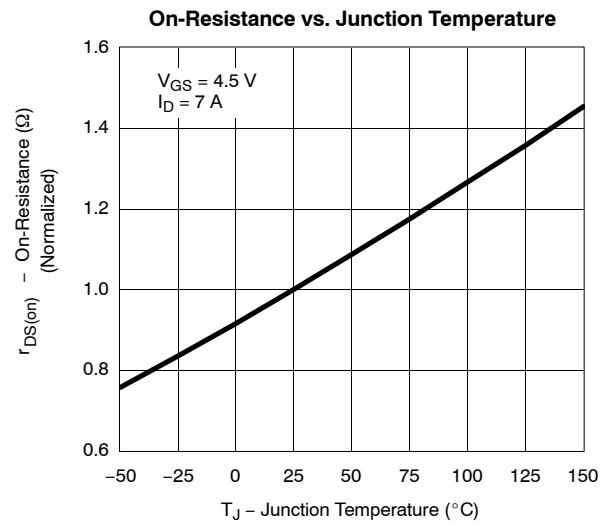
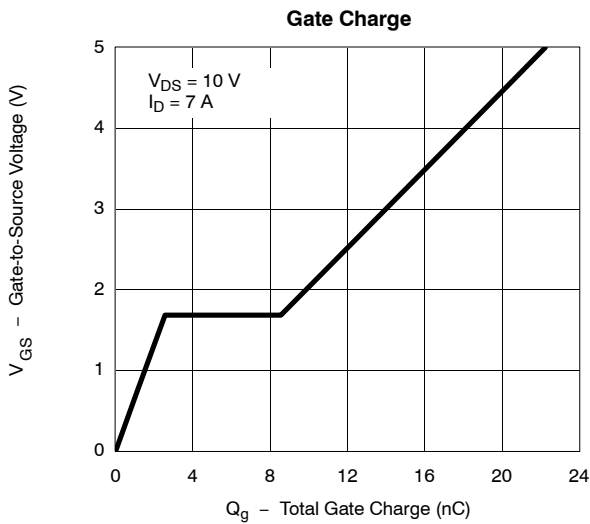
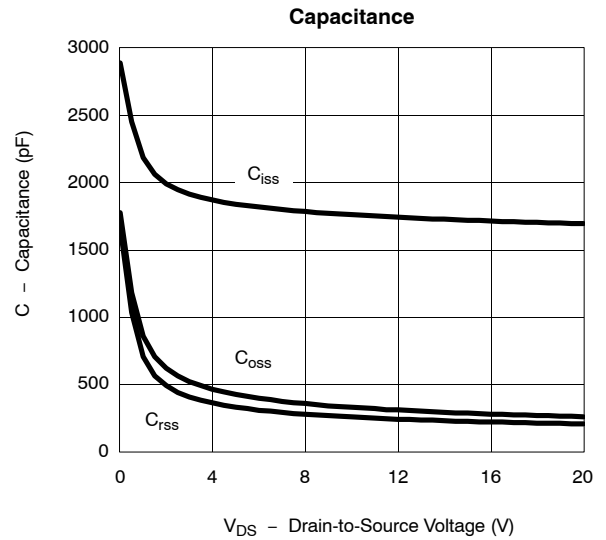
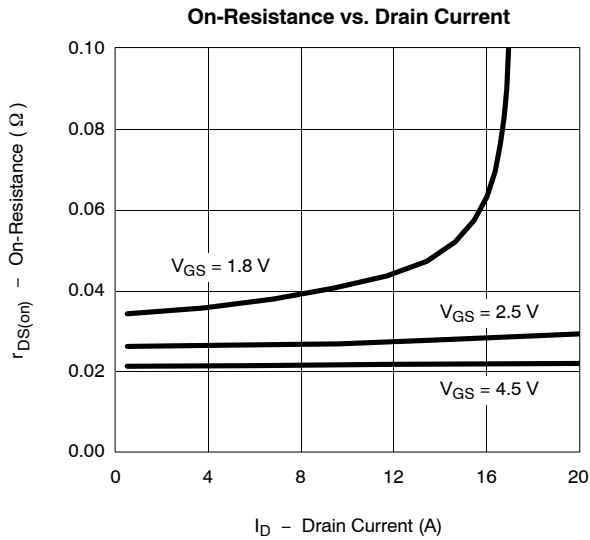
Transfer Characteristics





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

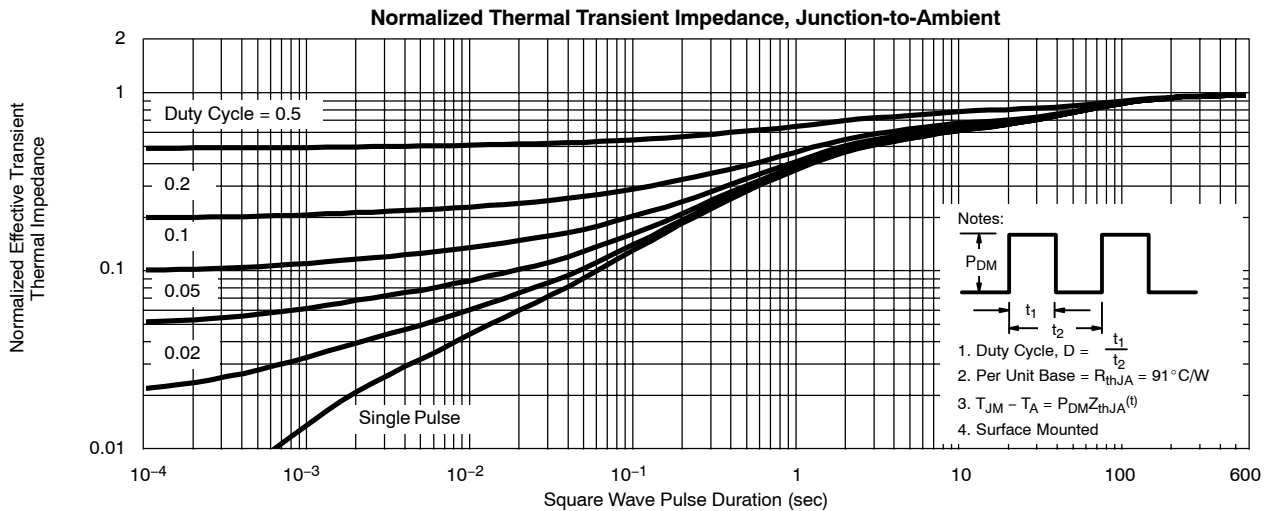
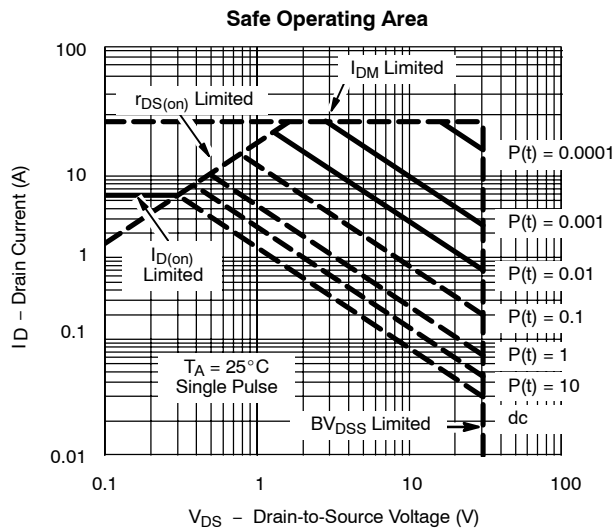
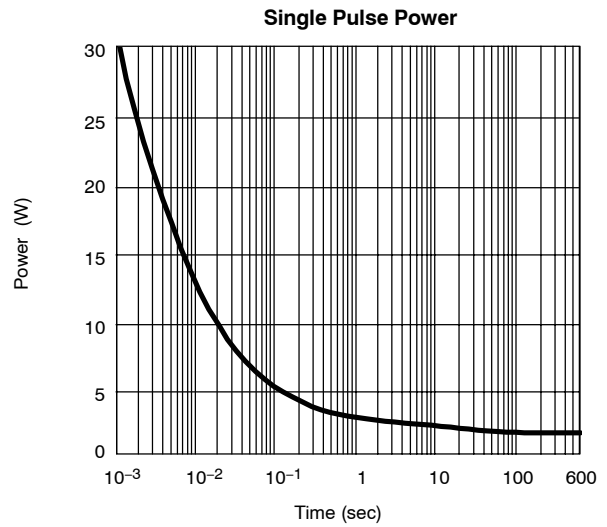
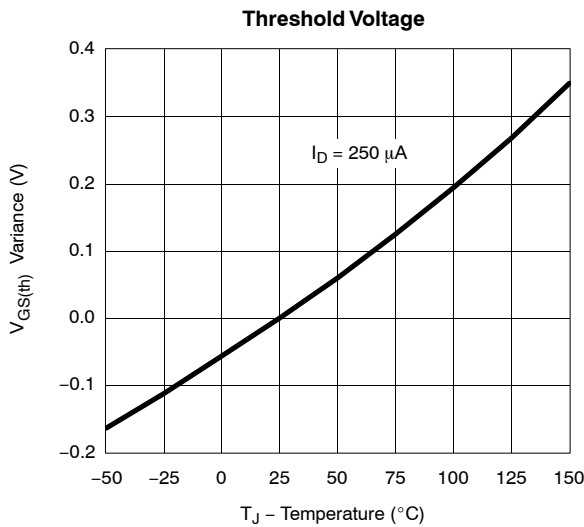
CHANNEL 2





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL 2





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

Normalized Thermal Transient Impedance, Junction-to-Foot

