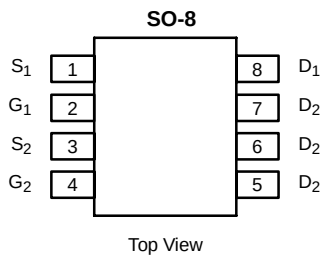




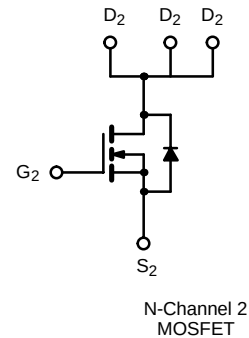
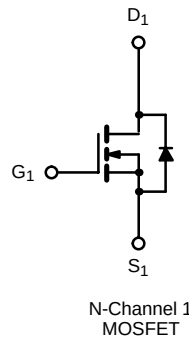
Asymmetrical Dual N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

	V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)
Channel-1	30	0.022 @ V _{GS} = 10 V	6.3
		0.030 @ V _{GS} = 4.5 V	5.4
Channel-2		0.0105 @ V _{GS} = 10 V	11.5
		0.0145 @ V _{GS} = 4.5 V	10



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



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				V
Gate-Source Voltage		V _{GS}	± 20				
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	6.3	5.3	11.5	8.6	A
	T _A = 70°C		5.4	4.2	9.5	6.9	
Pulsed Drain Current		I _{DM}	30		40		
Continuous Source Current (Diode Conduction) ^a		I _S	1.3	0.9	2.2	1.15	
Maximum Power Dissipation ^a	T _A = 25°C	P _D	1.4	1.0	2.4	1.25	W
	T _A = 70°C		0.9	0.64	1.5	0.80	
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	R _{thJA}	72	90	43	53	°C/W
	Steady-State		100	125	82	100	
Maximum Junction-to-Foot (Drain)	Steady-State	R _{thJC}	51	63	25	30	

Notes

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

MOSFET SPECIFICATIONS (T _J = 25°C UNLESS OTHERWISE NOTED)								
Parameter	Symbol	Test Condition		Min	Typ ^a	Max	Unit	
Static								
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	Ch-1 Ch-2	0.8 0.8			V	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	Ch-1 Ch-2			± 100 ± 100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V	Ch-1			1	μA	
			Ch-2			1		
		V _{DS} = 24 V, V _{GS} = 0 V, T _J = 85°C	Ch-1			15		
			Ch-2			15		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	Ch-1 Ch-2	20 30			A	
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 6.3 A	Ch-1		0.018	0.022	Ω	
		V _{GS} = 10 V, I _D = 11.5 A	Ch-2		0.0088	0.0105		
		V _{GS} = 4.5 V, I _D = 5.4 A	Ch-1		0.024	0.030		
		V _{GS} = 4.5 V, I _D = 10 A	Ch-2		0.0115	0.0145		
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 6.3 A	Ch-1		17		S	
		V _{DS} = 15 V, I _D = 11.5 A	Ch-2		30			
Diode Forward Voltage ^b	V _{SD}	I _S = 1.3 A, V _{GS} = 0 V	Ch-1		0.7	1.1	V	
		I _S = 2.2 A, V _{GS} = 0 V	Ch-2		0.72	1.1		
Dynamic ^a								
Total Gate Charge	Q _g	Channel-1 V _{DS} = 15 V, V _{GS} = 5 V, I _D = 6.3 A Channel-2 V _{DS} = 15 V, V _{GS} = 5 V, I _D = -11.5 A	Ch-1 Ch-2		8.0 25.5	12 35	nC	
Gate-Source Charge	Q _{gs}		Ch-1 Ch-2		1.75 4.5			
Gate-Drain Charge	Q _{gd}		Ch-1 Ch-2		3.2 11.5			
Gate Resistance	R _g		Ch-1 Ch-2	1.5 0.5		6.1 2.4		Ω
Turn-On Delay Time	t _{d(on)}		Channel-1 V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω Channel-2 V _{DD} = 15 V, R _L = 15 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω	Ch-1 Ch-2		10 15	20 30	ns
Rise Time	t _r			Ch-1 Ch-2		5 11	10 20	
Turn-Off Delay Time	t _{d(off)}	Ch-1 Ch-2			26 58	50 100		
Fall Time	t _f	Ch-1 Ch-2			8 53	16 100		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.3 A, di/dt = 100 A/μs		Ch-1		30	60	
		I _F = 2.2 A, di/dt = 100 μA/μs		Ch-2		42	70	

Notes

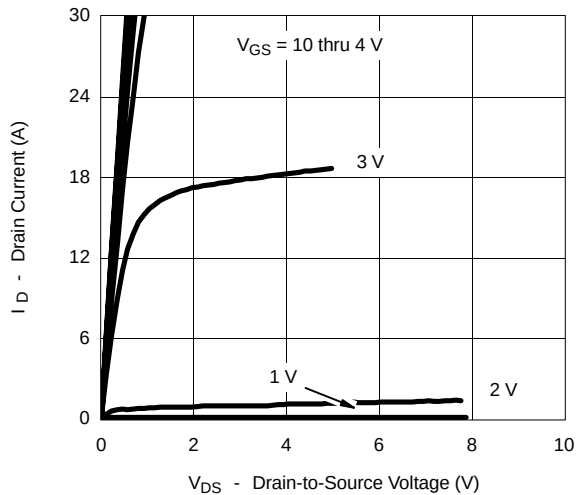
- a. Guaranteed by design, not subject to production testing.
 b. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.



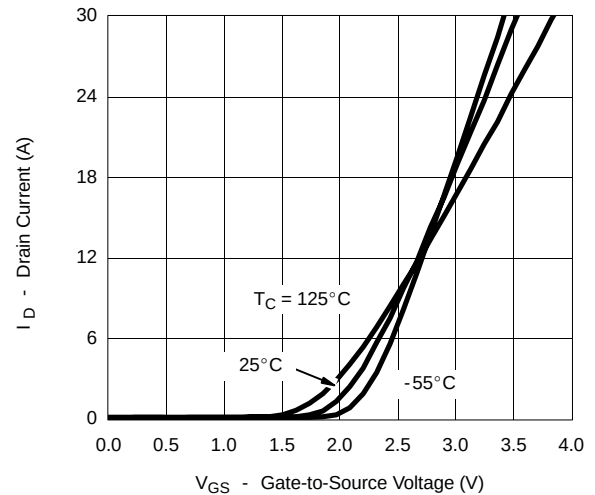
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL-1

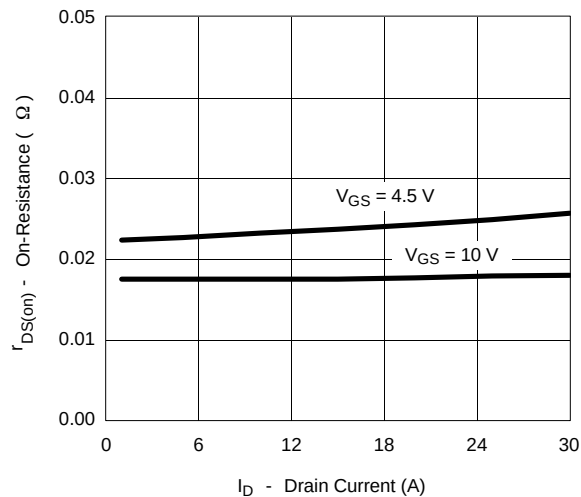
Output Characteristics



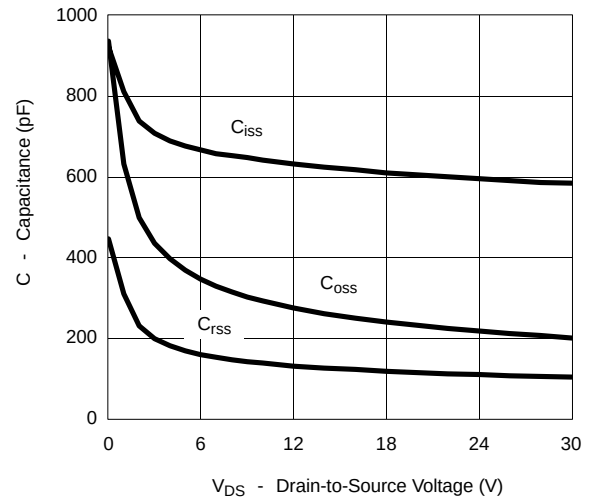
Transfer Characteristics



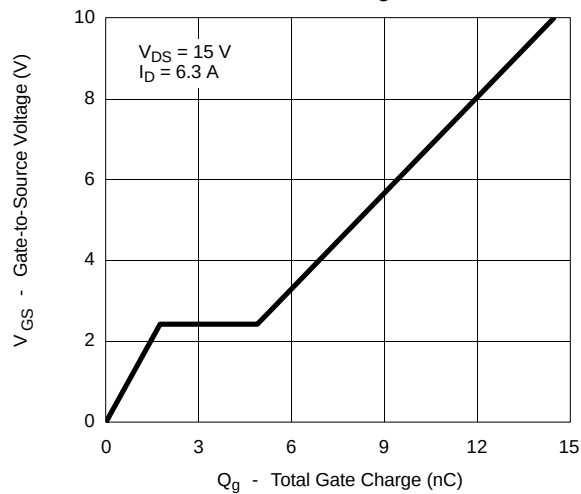
On-Resistance vs. Drain Current



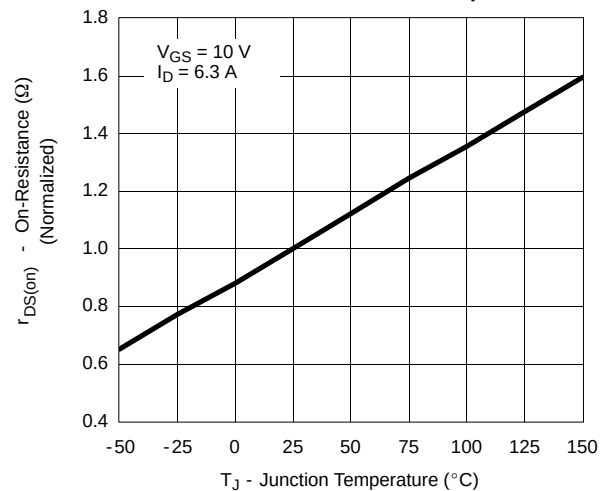
Capacitance



Gate Charge

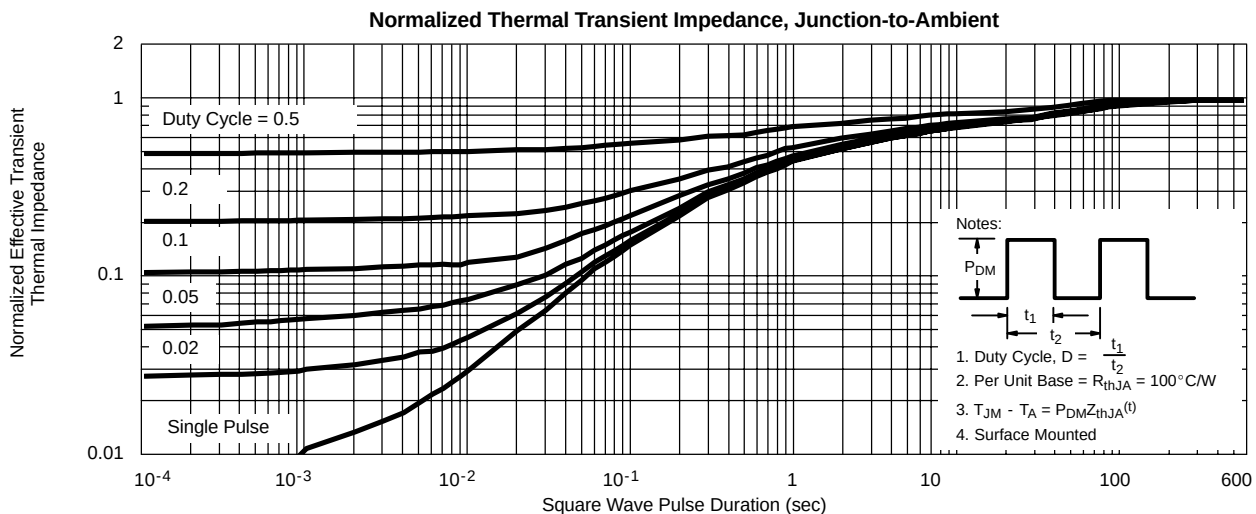
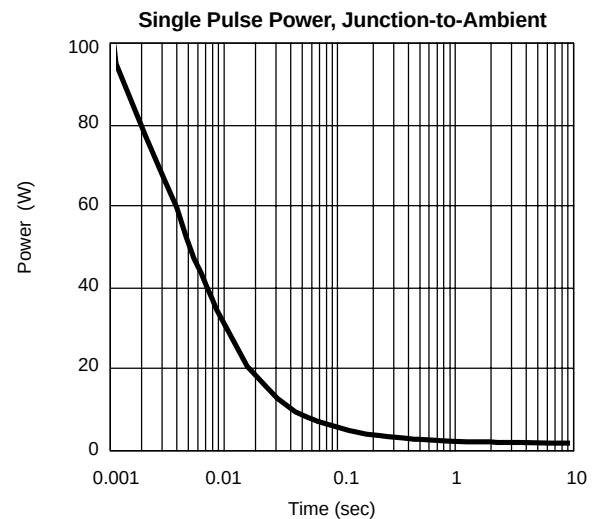
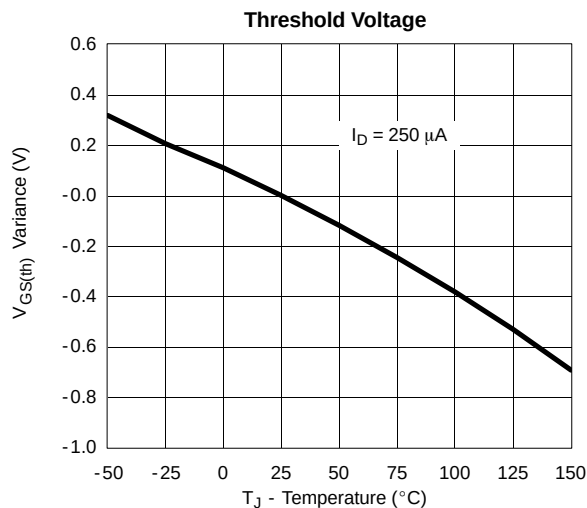
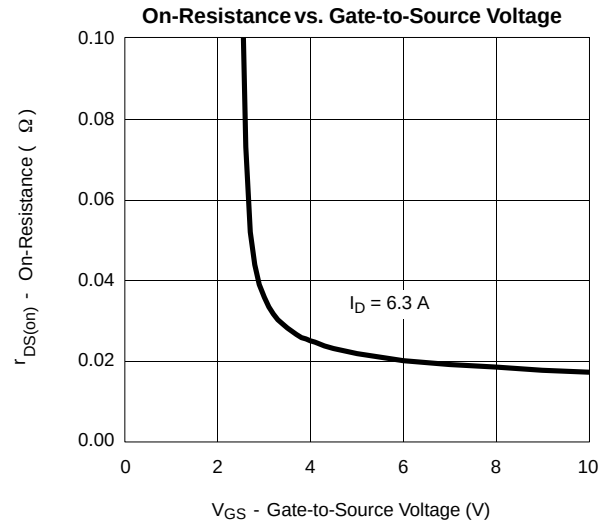
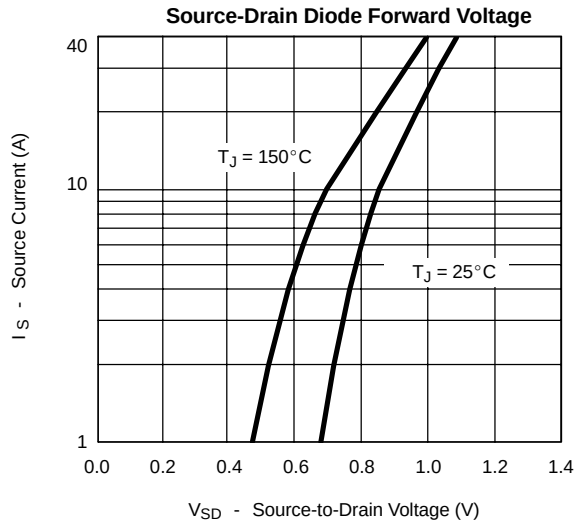


On-Resistance vs. Junction Temperature



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

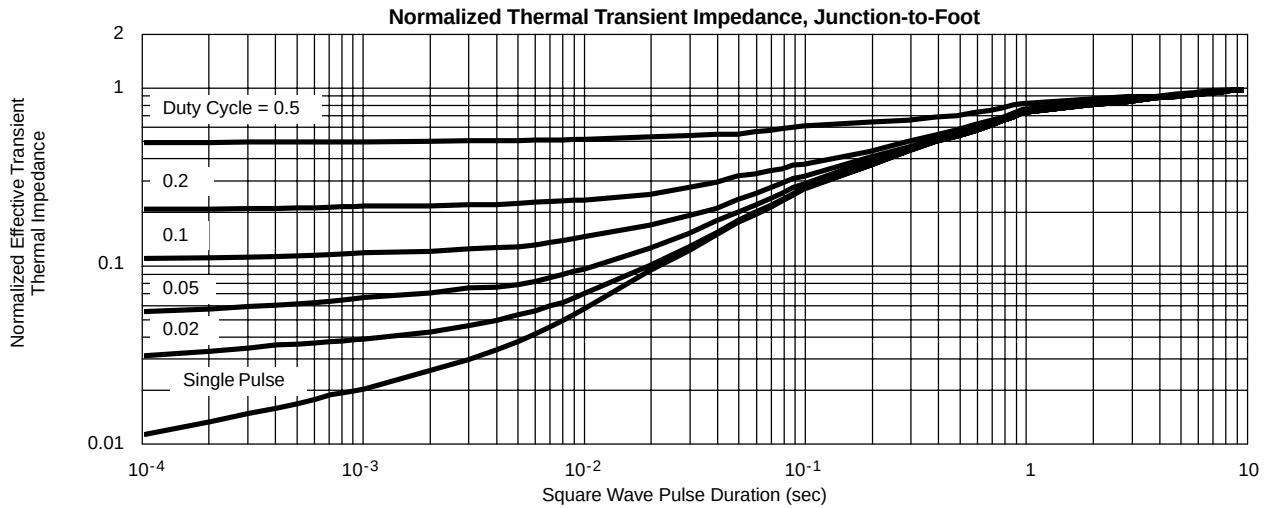
CHANNEL-1





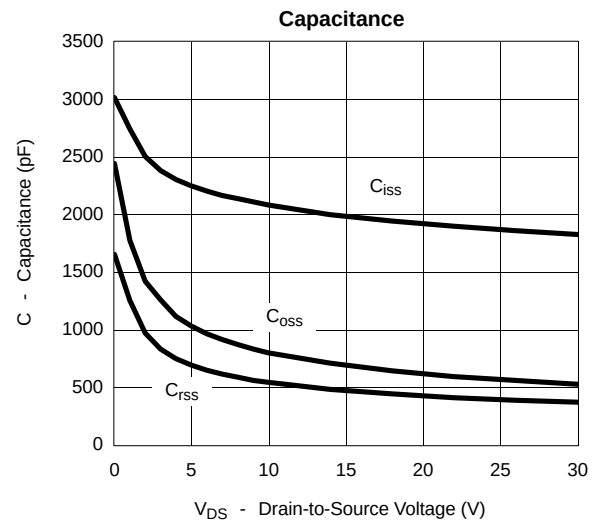
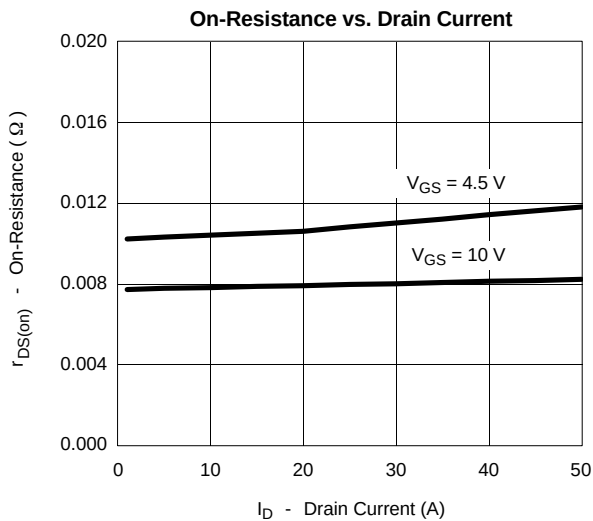
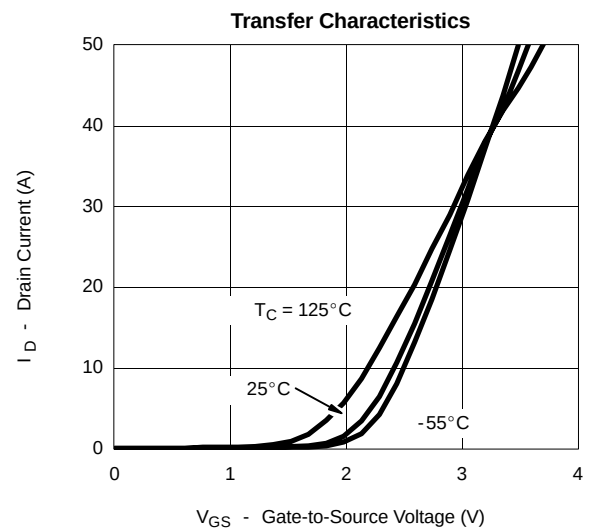
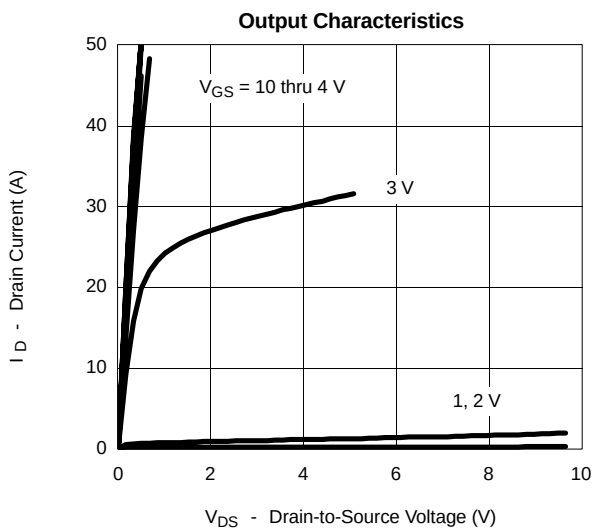
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL-1



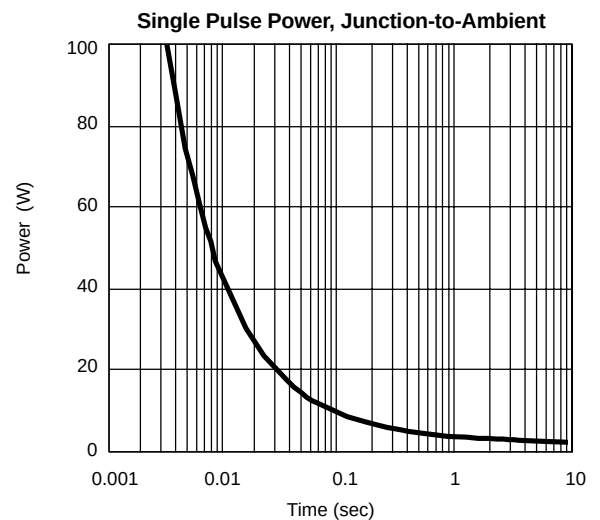
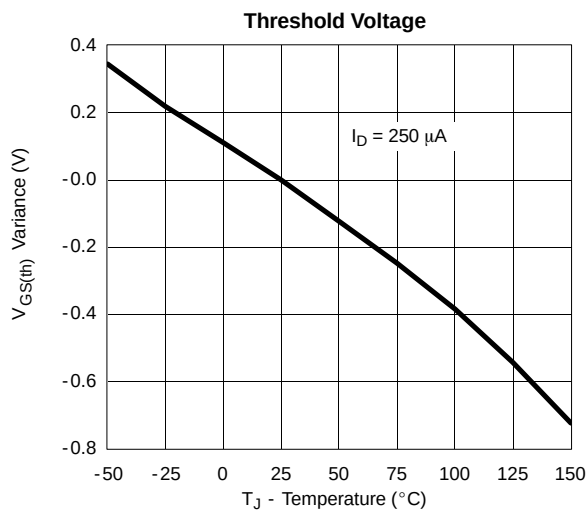
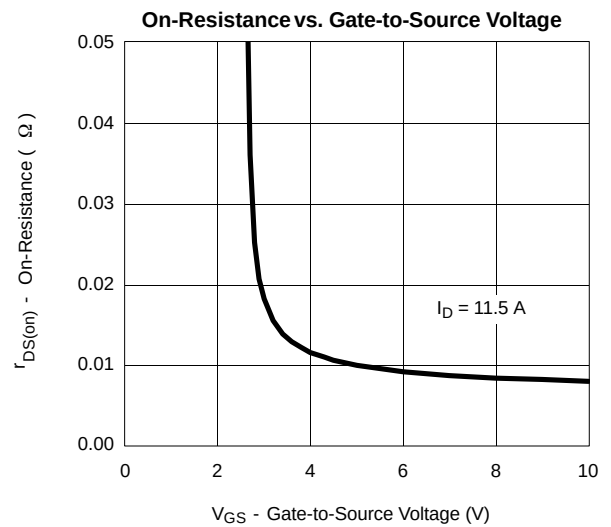
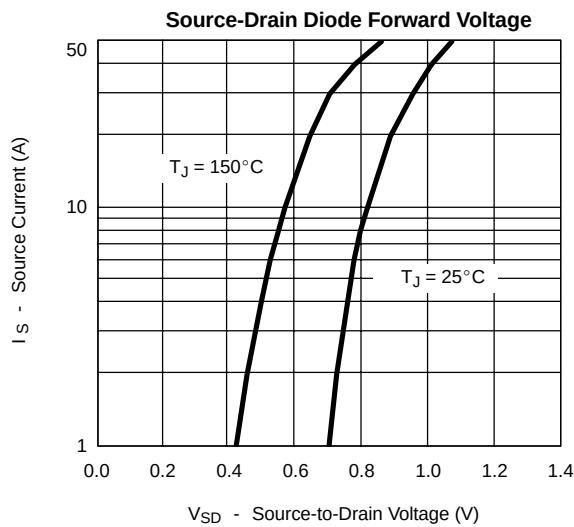
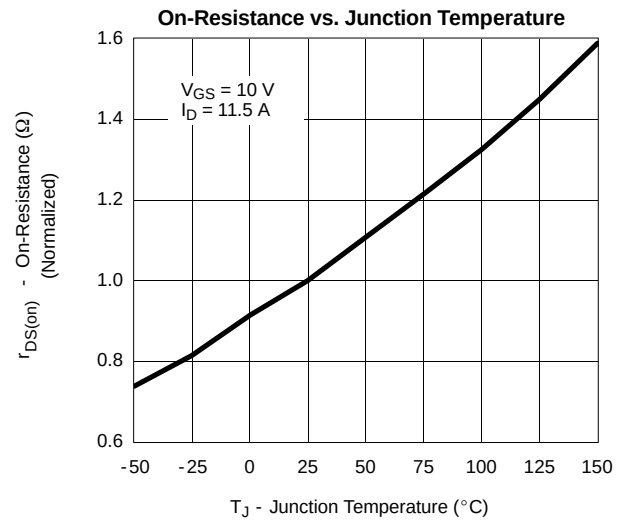
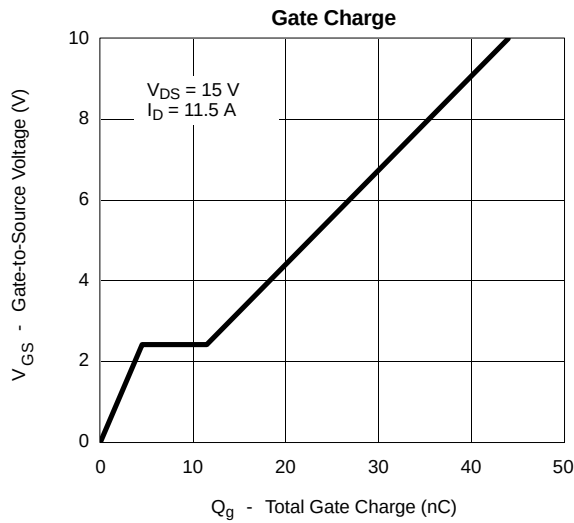
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

CHANNEL-2



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

CHANNEL-2





TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

CHANNEL-2

