Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	12	V
Gate-Source Voltage			V_{GSS}	±6	V
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	2.0 1.6	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	0.39	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	320	°C/W
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	0.9	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	141	°C/W
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	49	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	12	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	1	µA	V_{DS} = 12V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	µA	V_{GS} = ±6V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.35	0.42	1.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	119	150	mΩ	V_{GS} = 4.5V, I_D = 1A
			141	185		V_{GS} = 2.5V, I_D = 1A
			175	210		V_{GS} = 1.8V, I_D = 1A
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	V_{GS} = 0V, I_S = 150mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{ISS}	—	115	—	pF	V_{DS} = 6V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{OSS}	—	25	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	23	—	pF	
Gate Resistance	R_G	—	90	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_G	—	1.4	—	nC	V_{DS} = 4V, V_{GS} = 4.5V, I_D = 1A
Gate-Source Charge	Q_{GS}	—	0.1	—	nC	
Gate-Drain Charge	Q_{GD}	—	0.1	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.0	—	ns	V_{GS} = 6V, V_{DS} = 4V, R_G = 1Ω, I_D = 1A
Turn-On Rise Time	t_R	—	7.4	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	44	—	ns	
Turn-Off Fall Time	t_F	—	19	—	ns	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

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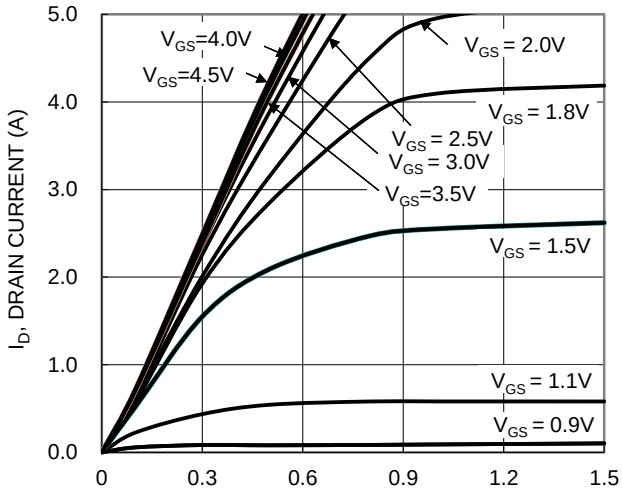

Figure1. Typical Output Characteristic

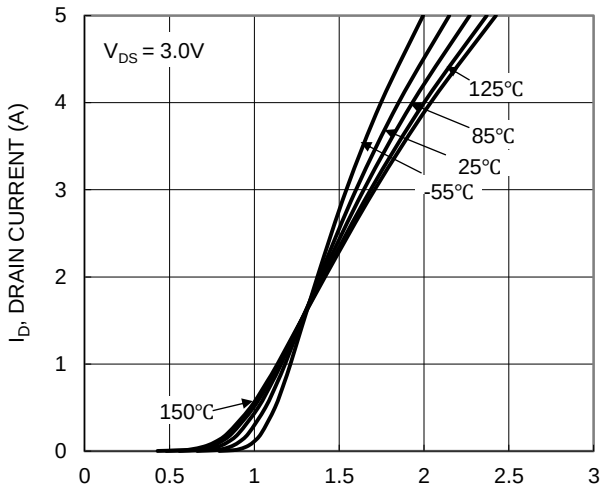

Figure 2. Typical Transfer Characteristic

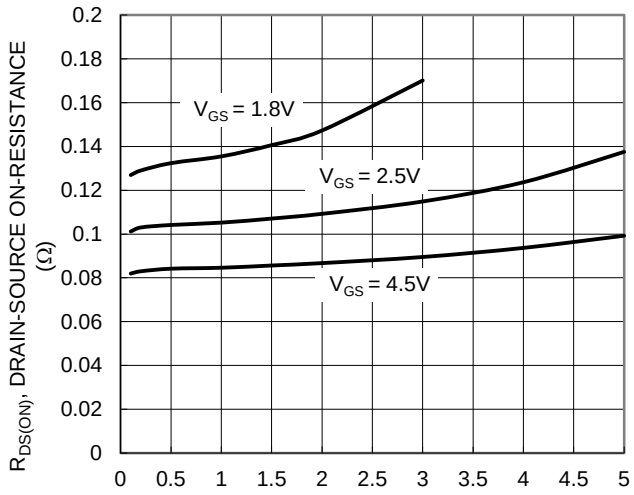

Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

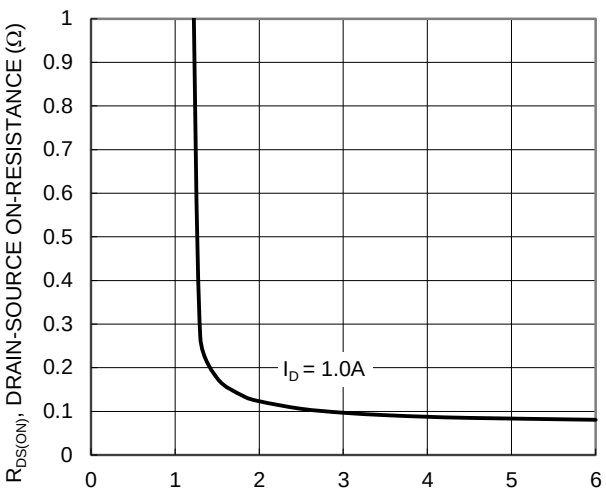

Figure 4. Typical Transfer Characteristic

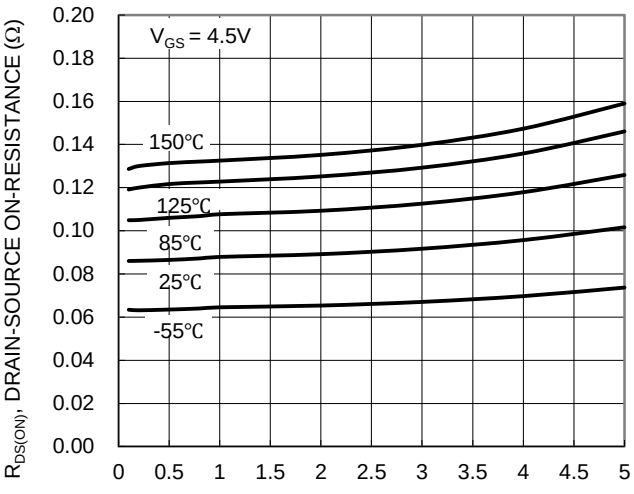

Figure 5. Typical On-Resistance vs. Drain Current and Temperature

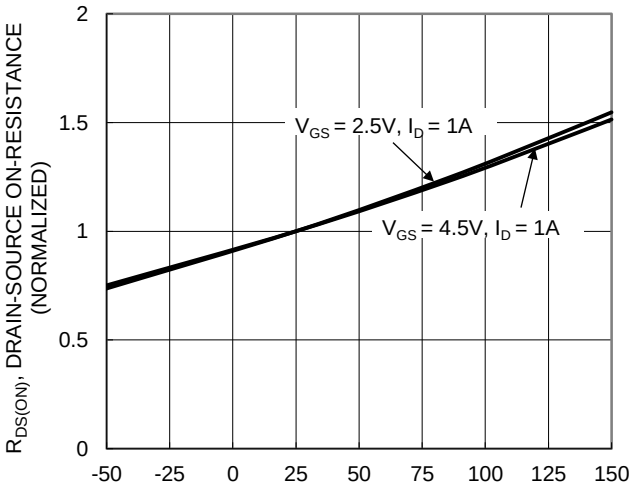

Figure 6. On-Resistance Variation with Temperature

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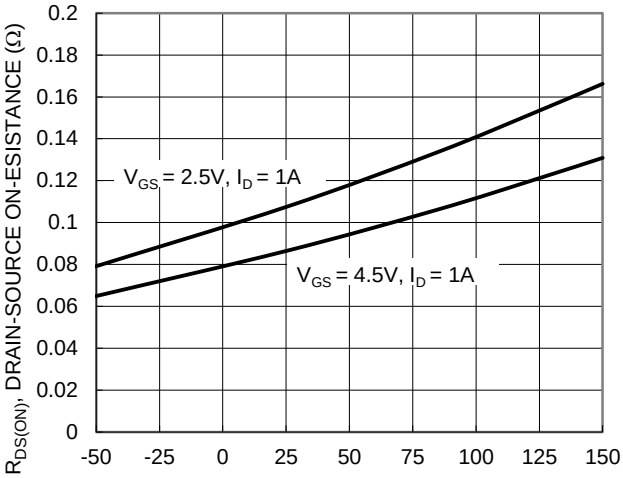

Figure 7. On-Resistance Variation with Temperature

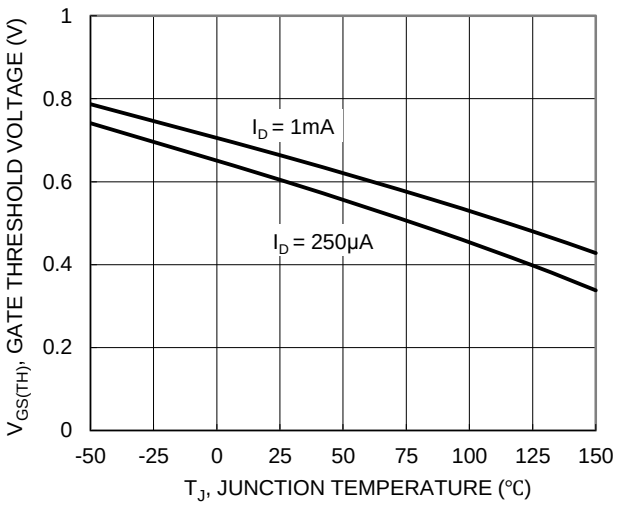

Figure 8. Gate Threshold Variation vs. junction Temperature

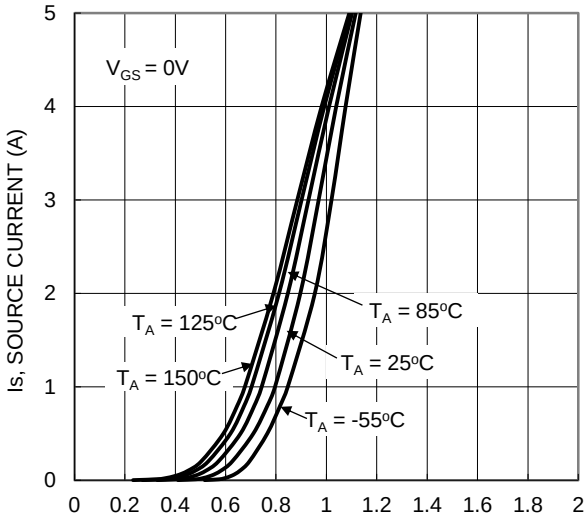

Figure 9. Diode Forward Voltage vs. Current

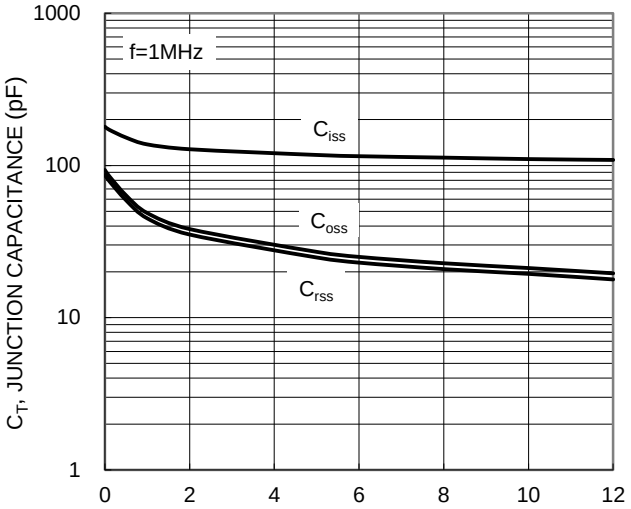

Figure 10. Typical Junction Capacitance

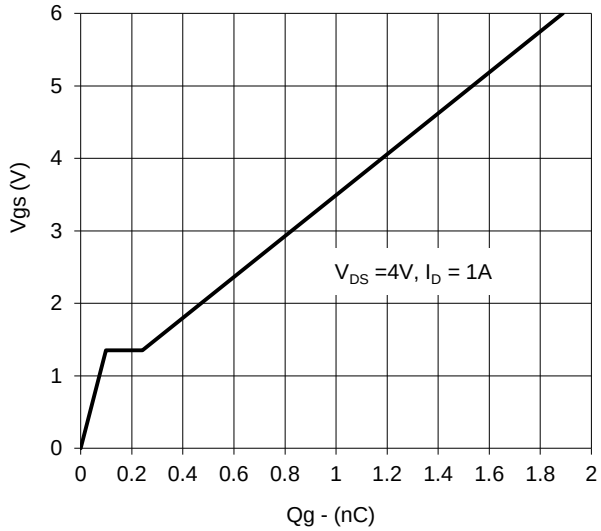

Figure 11. Gate Charge

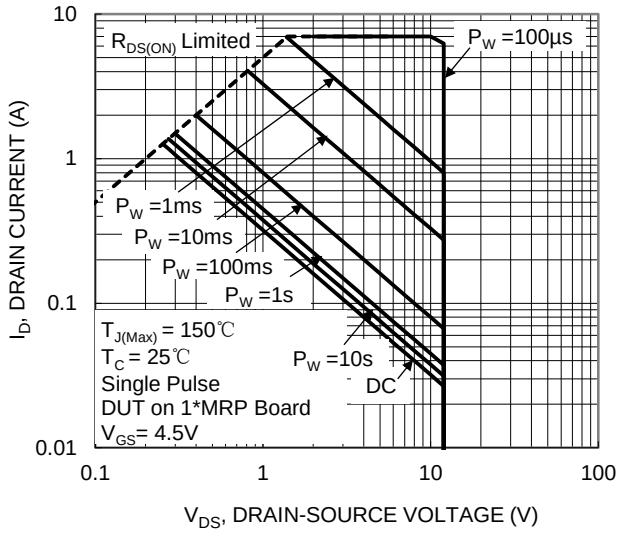

Figure 12. SOA, Safe Operation Area

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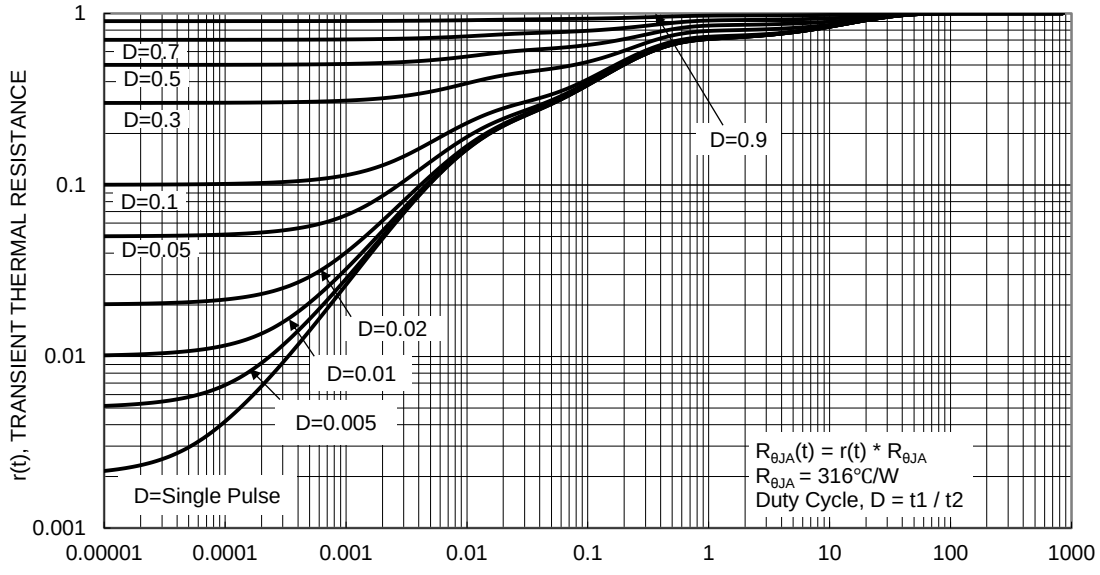

Figure 13. Transient Thermal Resistance

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Package Outline Dimensions

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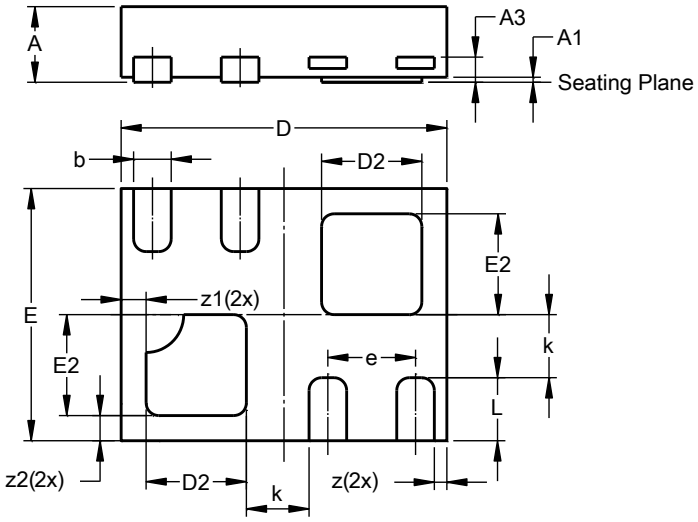
X2-DFN1310-6 (Type B)



X2-DFN1310-6 (Type B)			
Dim	**Min**	**Max**	**Typ**
A	0.25	0.35	0.30
A1	0	0.05	0.02
A3	--	--	0.100
b	0.10	0.20	0.15
D	1.25	1.35	1.30
D2	0.30	0.50	0.40
E	0.95	1.05	1.00
E2	0.30	0.50	0.40
e	--	--	0.35
k	0.15	--	--
L	0.20	0.30	0.25
z	--	--	0.05
z1	--	--	0.10
z2	--	--	0.10
All Dimensions in mm			

Suggested Pad Layout

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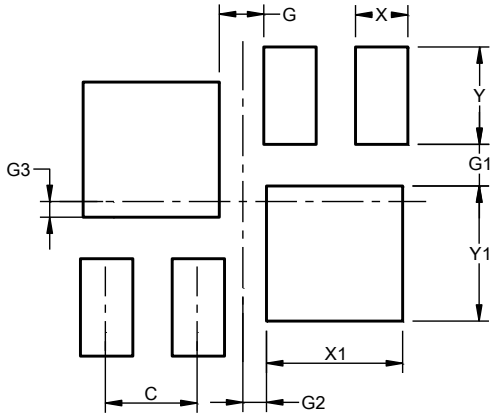
X2-DFN1310-6 (Type B)



Dimensions	Value (in mm)
C	0.350
G	0.17
G1	0.16
G2	0.09
G3	0.06
X	0.20
X1	0.52
Y	0.375
Y1	0.52

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