

## Maximum Ratings

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-12	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Source Current @ $V_{GS} = -4.5V$ (Note 5)	$I_D$	-2.5 -2.0	A
Continuous Source Current @ $V_{GS} = -4.5V$ (Note 6)	$I_D$	-3.2 -2.6	A
Pulsed Drain Current (Pulse Duration 10 $\mu$ s, Duty Cycle $\leq 1\%$ )	$I_{DM}$	-13	A
Continuous Source-Drain Diode Current	$I_S$	-1.2	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	$P_D$	0.67	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	187	$^{\circ}C/W$
Total Power Dissipation (Note 6)	$P_D$	1.1	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	117	$^{\circ}C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^{\circ}C$

## Electrical Characteristics (@ $T_A = +25^{\circ}C$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-12	-	-	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	-1	$\mu A$	$V_{DS} = -12V, V_{GS} = 0V$
Gate-Body Leakage	$I_{GSS}$	-	-	$\pm 10$	$\mu A$	$V_{GS} = \pm 8V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.35	-0.55	-0.8	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	65 80 90 115 135 150	83 96 150 170 300 400	m $\Omega$	$V_{GS} = -4.5V, I_D = -3A$ $V_{GS} = -2.5V, I_D = -2A$ $V_{GS} = -1.8V, I_D = -1A$ $V_{GS} = -1.5V, I_D = -1A$ $V_{GS} = -1.4V, I_D = -1A$ $V_{GS} = -1.3V, I_D = -1A$
Forward Transfer Admittance	$ Y_{fs} $	-	6.5	-	S	$V_{DS} = -4V, I_S = -1.5A$
Body Diode Forward Voltage	$V_{SD}$	-	-0.7	-	V	$V_{GS} = 0V, I_S = -1.5A$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	-	680	820	pF	$V_{DS} = -6V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	-	220	290	pF	
Reverse Transfer Capacitance	$C_{rss}$	-	205	280	pF	
Gate Resistance	$R_g$	-	11.2	17	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge	$Q_g$	-	9.0	14	nC	$V_{GS} = -4.5V, V_{DS} = -6V,$ $I_D = -2A$
Gate-Source Charge	$Q_{gs}$	-	1.0	-	nC	
Gate-Drain Charge	$Q_{gd}$	-	2.6	-	nC	
Turn-On Delay Time	$t_{D(ON)}$	-	4.4	9	ns	$V_{DD} = -4V, I_D = -2A$ $V_{GEN} = -4.5V, R_g = 1\Omega, R_L = 3\Omega$
Turn-On Rise Time	$t_R$	-	10.1	-	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	22	33	ns	
Turn-Off Fall Time	$t_F$	-	20	-	ns	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.

**Electrical Characteristics** (@T<sub>A</sub> = 0°C.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>ON CHARACTERISTICS (Note 7,Note 8)</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	62	83	mΩ	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A
			78	96		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A
			88	150		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A
			112	170		V <sub>GS</sub> = -1.5V, I <sub>D</sub> = -1A
			130	300		V <sub>GS</sub> = -1.4V, I <sub>D</sub> = -1A
			150	400		V <sub>GS</sub> = -1.3V, I <sub>D</sub> = -1A

**Electrical Characteristics** (@T<sub>A</sub> = + 65°C.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>ON CHARACTERISTICS (Note 7,Note 8)</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	73	93	mΩ	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A
			89	118		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A
			107	185		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A
			127	195		V <sub>GS</sub> = -1.5V, I <sub>D</sub> = -1A
			141	300		V <sub>GS</sub> = -1.4V, I <sub>D</sub> = -1A
			163	400		V <sub>GS</sub> = -1.3V, I <sub>D</sub> = -1A

Note: 8. Guaranteed by design. Not subject to production testing.

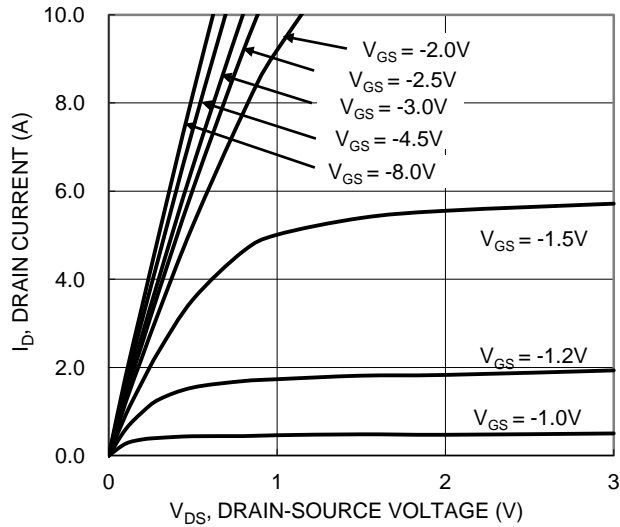


Figure 1. Typical Output Characteristic

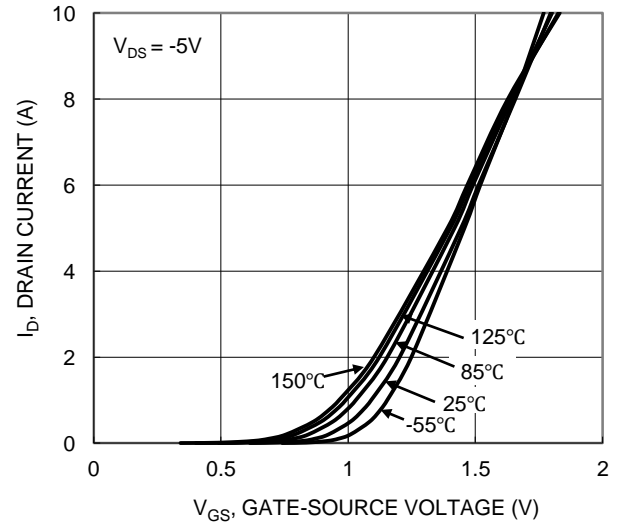


Figure 2. Typical Transfer Characteristic

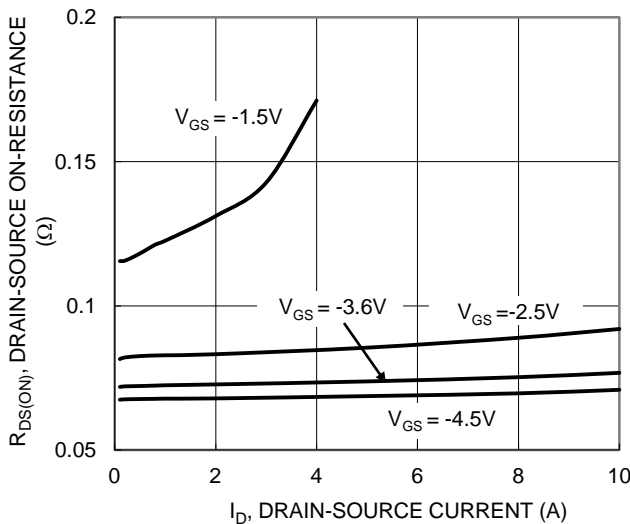


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

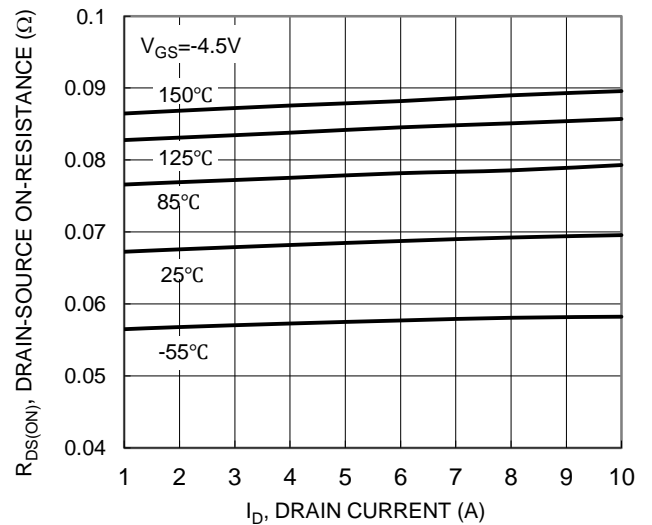


Figure 4. Typical On-Resistance vs. Drain Current and Junction Temperature

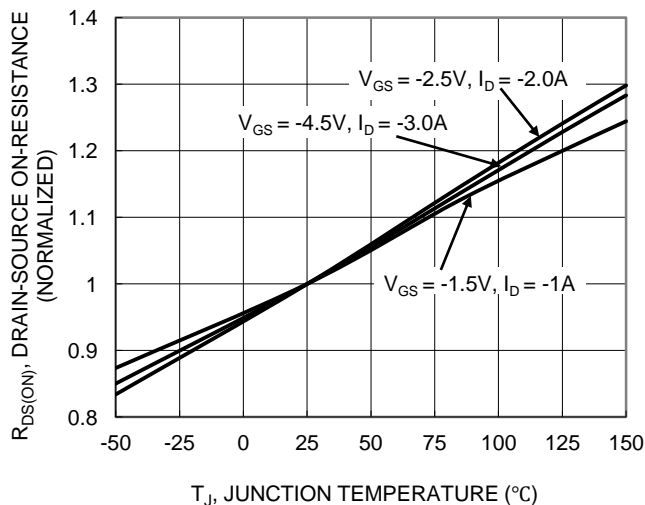


Figure 5. On-Resistance Variation with Junction Temperature

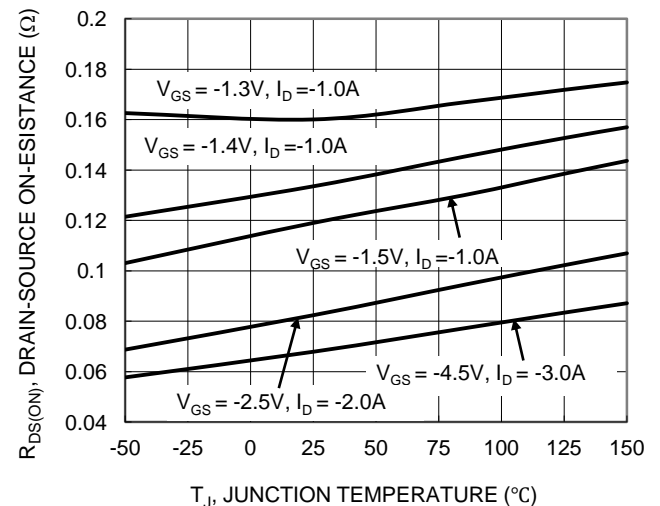


Figure 6. On-Resistance Variation with Junction Temperature

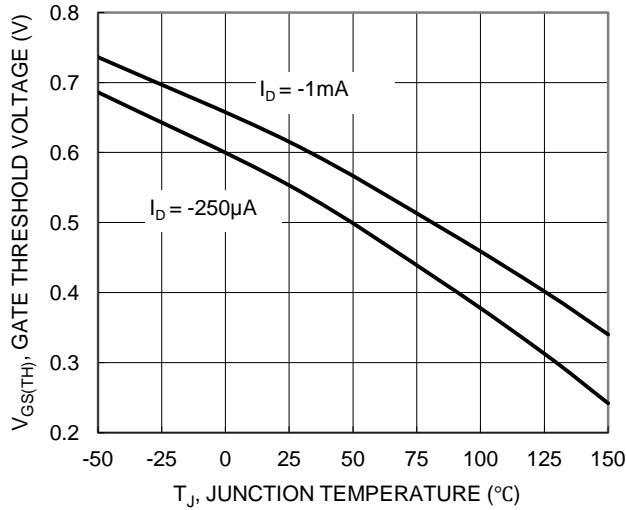


Figure 7. Gate Threshold Variation vs. Junction Temperature

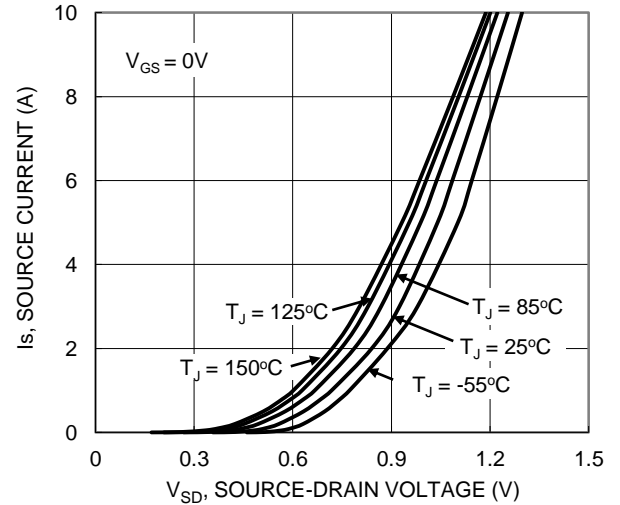


Figure 8. Diode Forward Voltage vs. Current

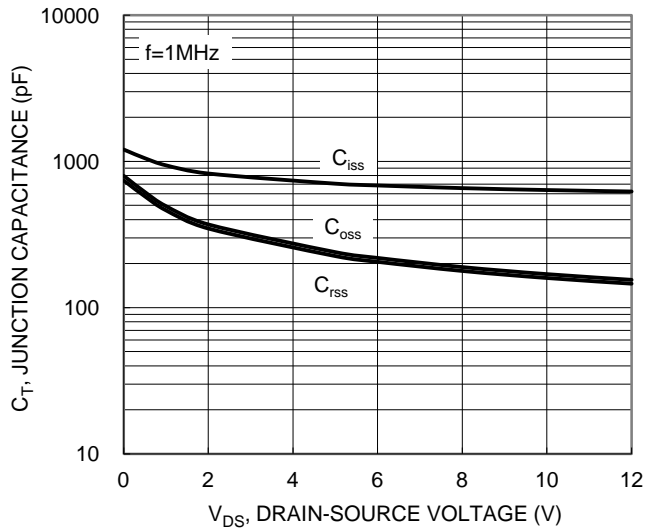


Figure 9. Typical Junction Capacitance

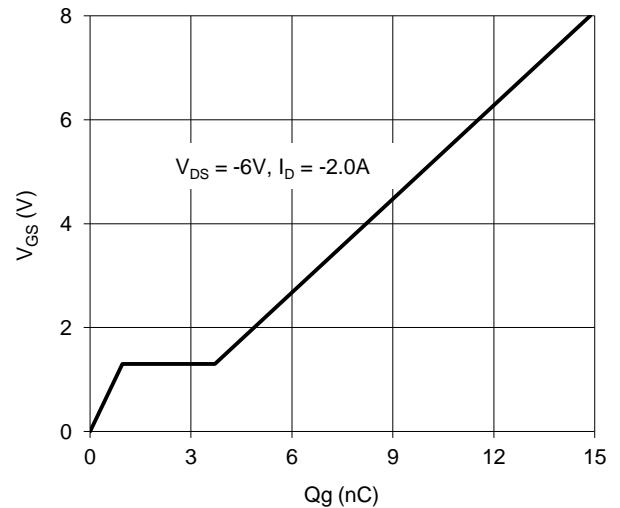


Figure 10. Gate Charge

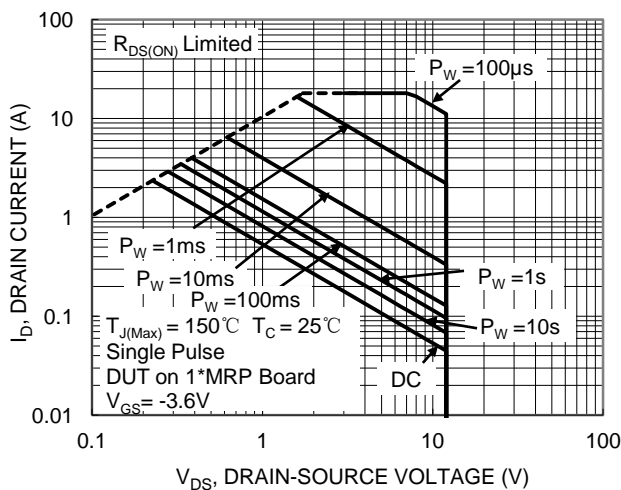


Figure 11. SOA, Safe Operation Area

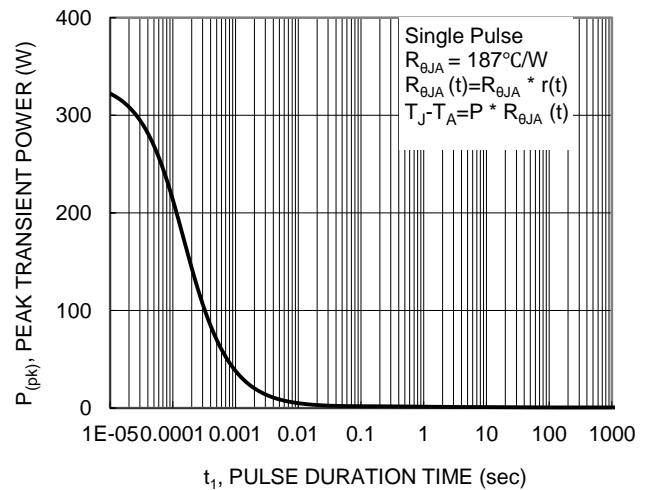


Figure 12. Single Pulse Maximum Power Dissipation

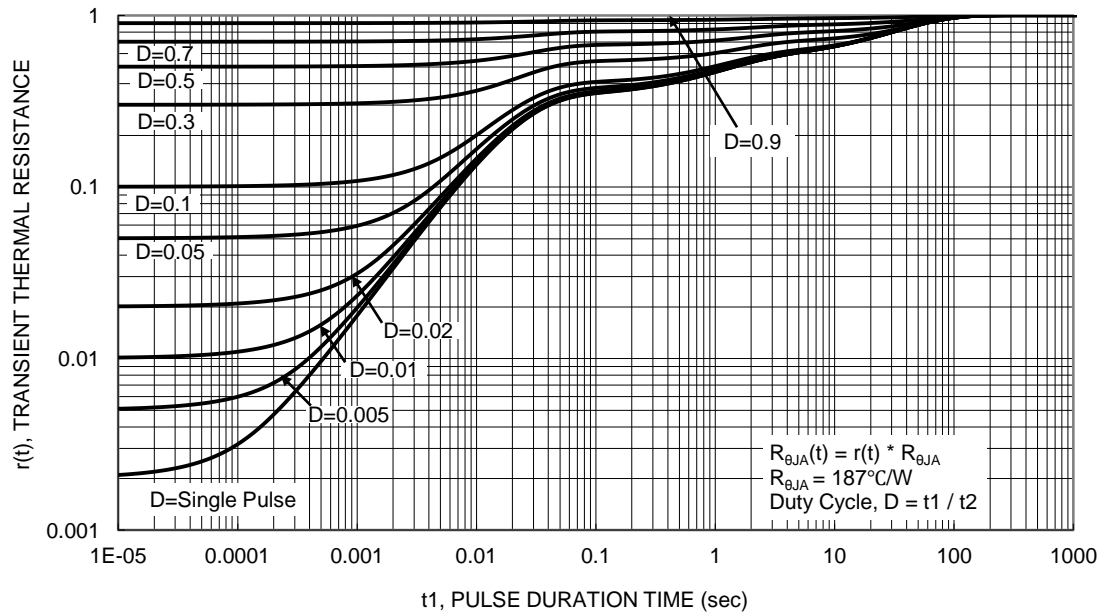
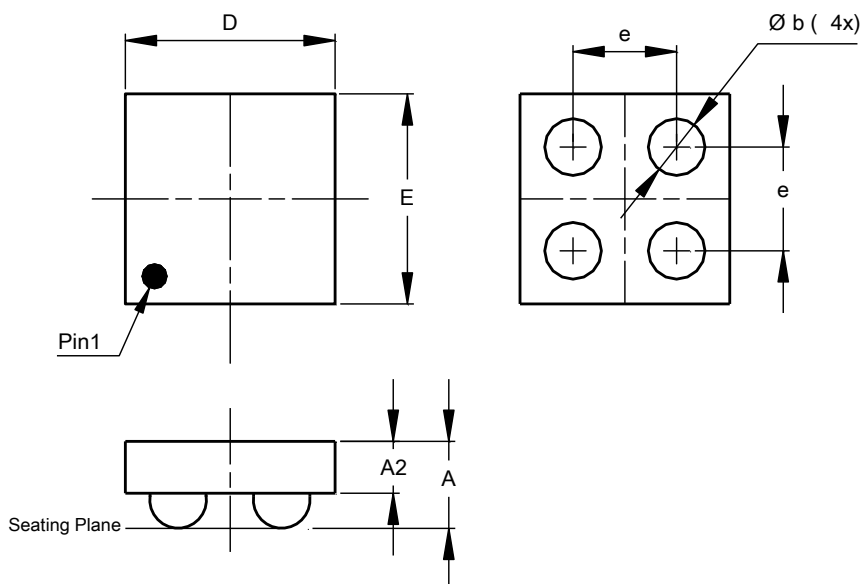


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**X2-WLB0808-4**

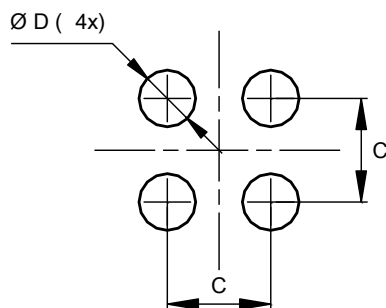


X2-WLB0808-4			
Dim	Min	Max	Typ
A	--	0.400	0.375
A2	--	--	0.180
b	0.1971	0.2409	0.219
D	0.790	0.820	0.816
E	0.790	0.820	0.816
e	--	--	0.400
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**X2-WLB0808-4**



Dimensions	Value (in mm)
C	0.400
D	0.219

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