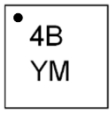
Marking Information (Note 5)

Marking 1



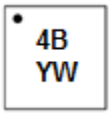
4B = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: I = 2021)
M or $\overline{M}$ = Month (ex: 9 = September)

Date Code Key

Year	2017	…	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	E	…	I	J	K	L	M	N	O	P	R	S

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Marking 2



4B = Product Type Marking Code
YW = Date Code Marking
Y or $\overline{Y}$ = Year (ex: 1 = 2021)
W or $\overline{W}$ = Week (ex: a = Week 27; z Represents Week 52 and 53)

Date Code Key

Year	2017	…	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	7	…	1	2	3	4	5	6	7	8	9	0

Week	1-26	27-52	53
Code	A-Z	a-z	z

Note: 5. The marking code changed to Marking 2 from week 6, 2021.

Maximum Ratings

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	12	V
Gate-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current @ V_{GS} = 3.3V (Note 6)	T_A = +25°C T_A = +70°C	I_D	5.4 4.3	A
Continuous Drain Current @ V_{GS} = 3.3V (Note 7)	T_A = +25°C T_A = +70°C	I_D	7.5 6.1	A
Pulsed Drain Current (Pulse Duration 10µs, Duty Cycle ≤ 1%)		I_{DM}	15	A
Continuous Source-Drain Diode Current (Note 7)		I_S	1.47	A
Pulse Diode Forward Current (Note 7)		I_{SM}	15	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_D	0.74	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	167	°C/W
Total Power Dissipation (Note 7)	P_D	1.47	W
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	85	°C/W
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 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	12	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	µA	V_{DS} = 9.6V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.4	0.7	1.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	14.1	17.0	mΩ	V_{GS} = 3.3V, I_D = 5.0A
		—	14.4	19.0		V_{GS} = 3.0V, I_D = 5.0A
		—	15.5	21.0		V_{GS} = 2.5V, I_D = 5.0A
		—	16.0	23.0		V_{GS} = 2.3V, I_D = 5.0A
		—	16.8	24.0		V_{GS} = 2.1V, I_D = 5.0A
		—	21.3	34.0		V_{GS} = 2.1V, I_D = 5.0A, +125°C (Note 9)
		—	20.0	30.0		V_{GS} = 1.8V, I_D = 3.0A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	6.6	—	S	V_{DS} = 6V, I_S = 1.0A
Body Diode Forward Voltage	V_{SD}	—	0.7	1	V	V_{GS} = 0V, I_S = 1.0A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	1002	1503	pF	V_{DS} = 6V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	312	468	pF	
Reverse Transfer Capacitance	C_{rss}	—	259	389	pF	
Gate Resistance	R_g	—	2.2	4.4	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	—	10.5	16	nC	V_{GS} = 3.3V, V_{DS} = 6V, I_D = 5.0A
Gate-Source Charge	Q_{gs}	—	1.0	1.5	nC	
Gate-Drain Charge	Q_{gd}	—	4.1	6.2	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	3.7	10	ns	V_{DD} = 6V, I_D = 5.0A, V_{GEN} = 4.5V, R_G = 1Ω, R_L = 1.2Ω
Turn-On Rise Time	t_R	—	6.3	15	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	17.9	35	ns	
Turn-Off Fall Time	t_F	—	7.5	15	ns	
Reverse Recovery Charge	Q_{RR}	—	2.7	5	nC	I_F = 5A, di/dt = 100A/µs
Body Diode Reverse Recovery Time	t_{RR}	—	14.2	28	ns	

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

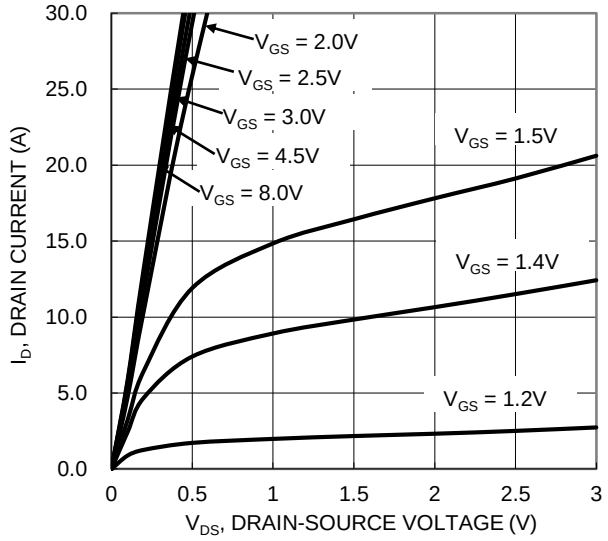


Figure 1. Typical Output Characteristic

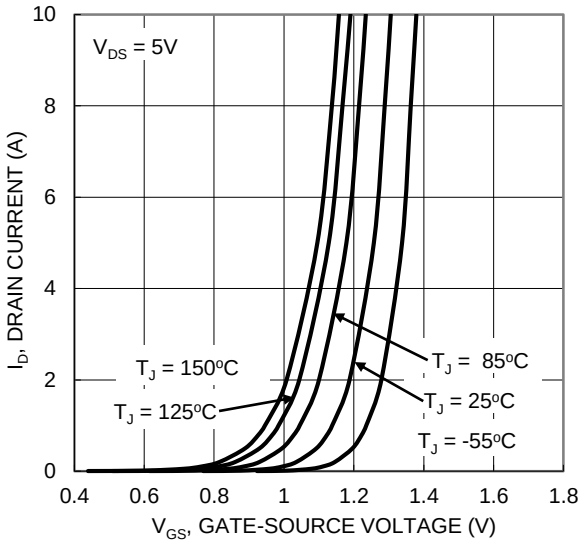


Figure 2. Typical Transfer Characteristic

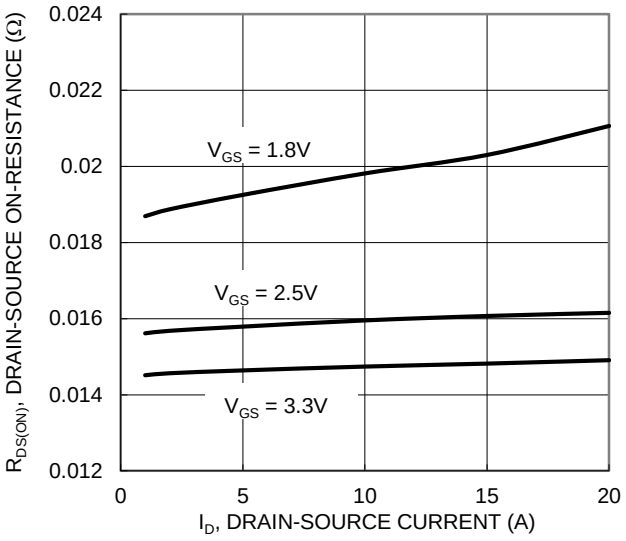


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

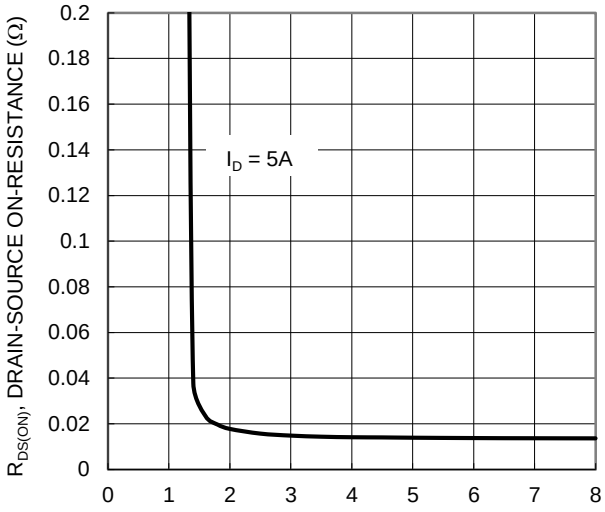


Figure 4. Typical Transfer Characteristic

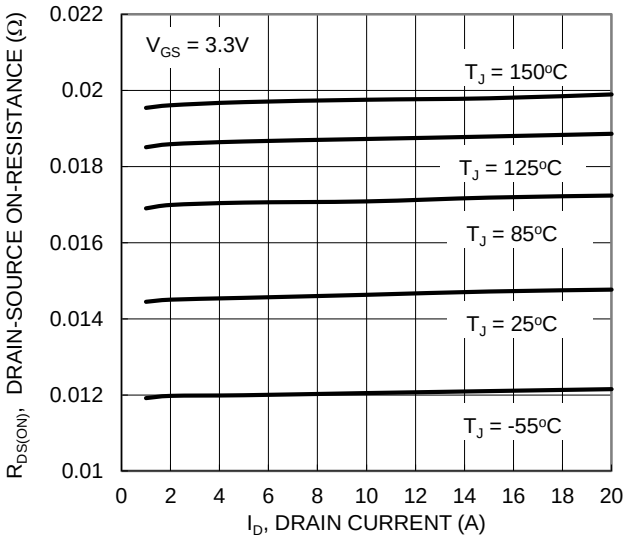


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

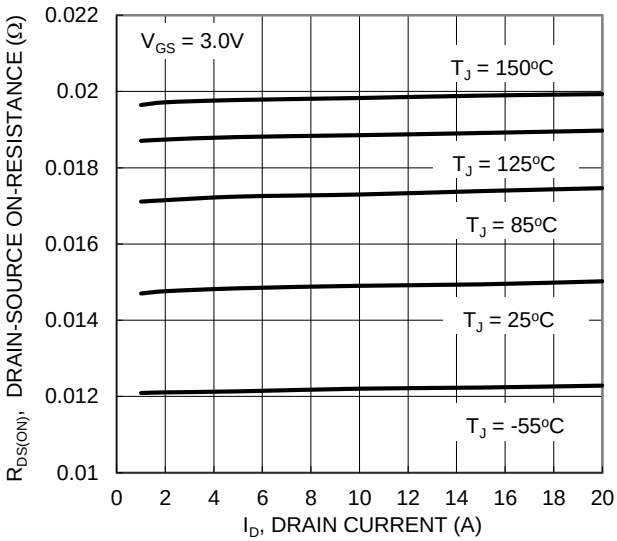


Figure 6. Typical On-Resistance vs. Drain Current and Junction Temperature

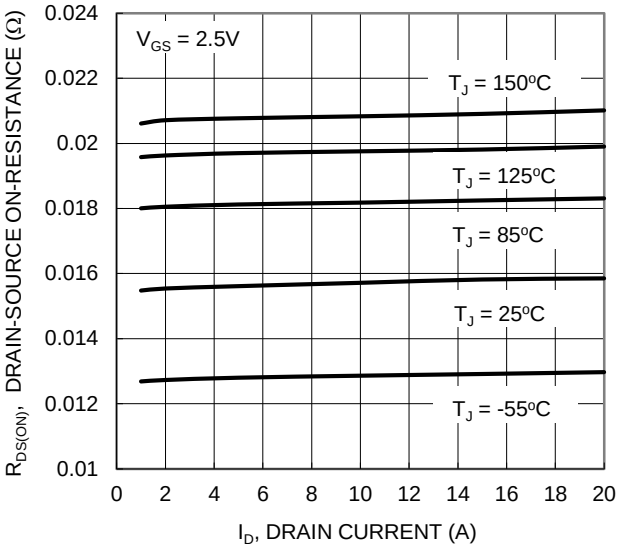


Figure 7. Typical On-Resistance vs. Drain Current and Junction Temperature

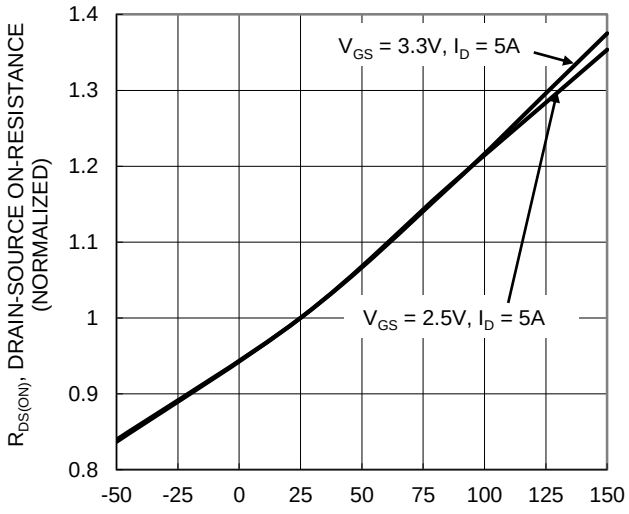


Figure 8. On-Resistance Variation with Junction Temperature

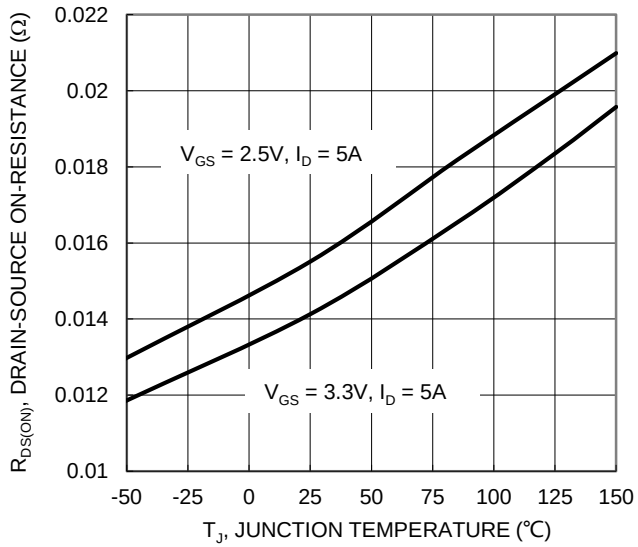


Figure 9. On-Resistance Variation with Junction Temperature

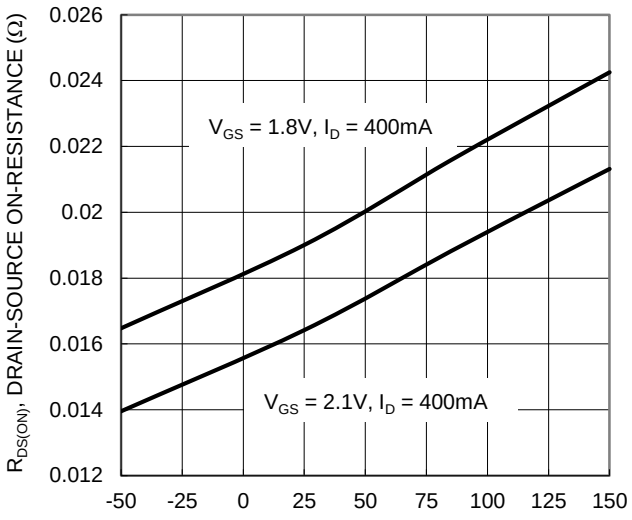


Figure 10. On-Resistance Variation with Junction Temperature

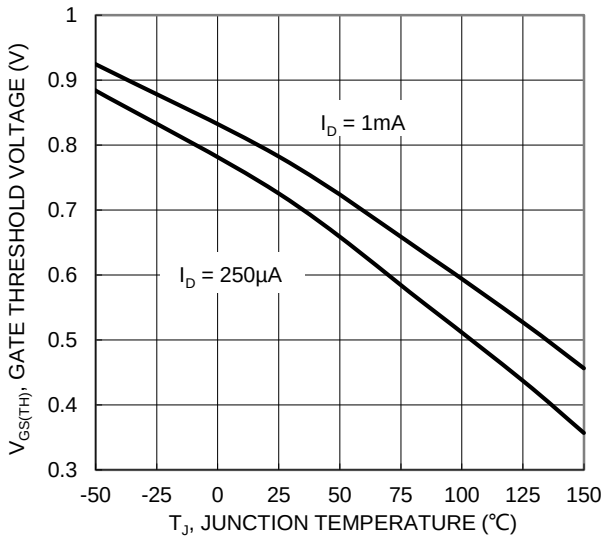


Figure 11. Gate Threshold Variation vs. Junction Temperature

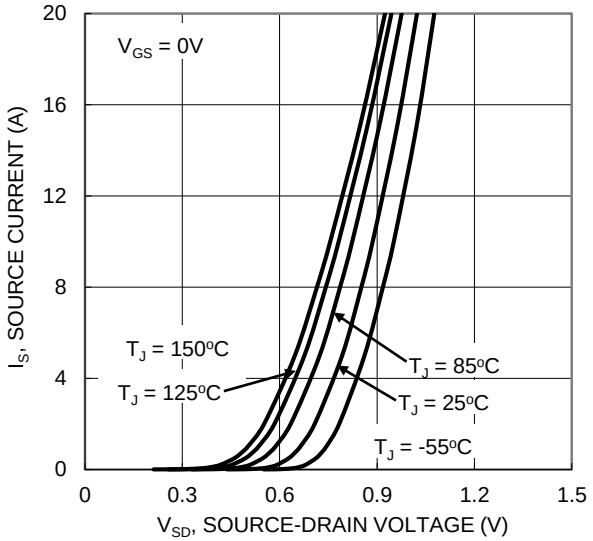


Figure 12. Diode Forward Voltage vs. Current

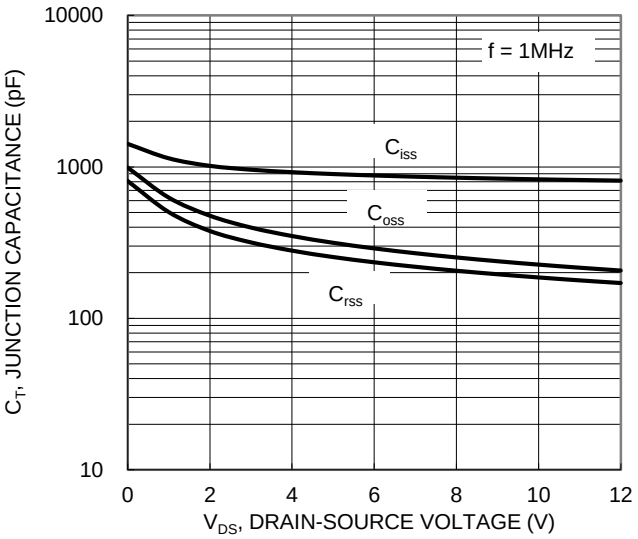


Figure 13. Typical Junction Capacitance

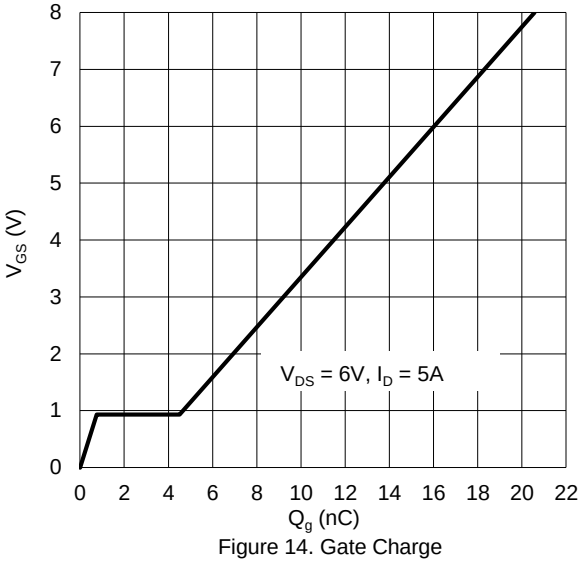


Figure 14. Gate Charge

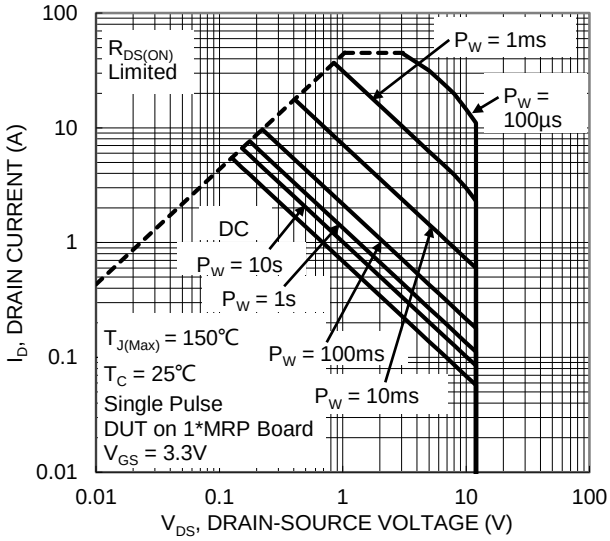


Figure 15. SOA, Safe Operation Area

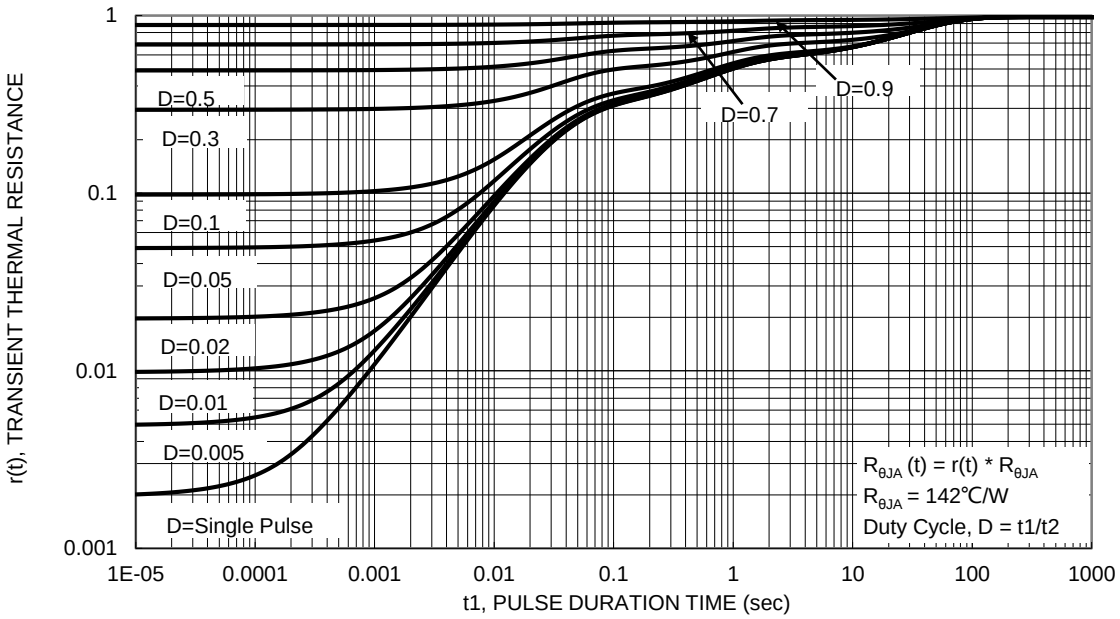
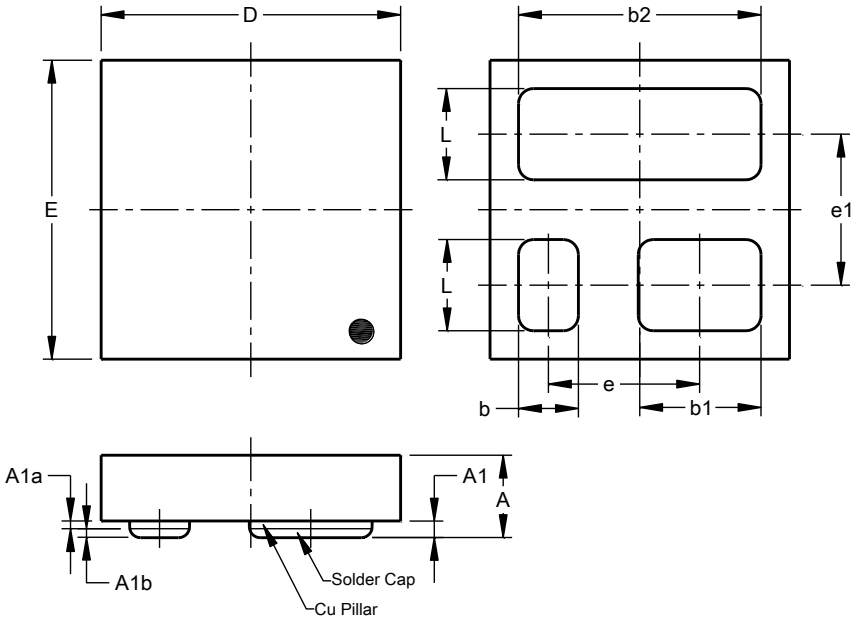


Figure 16. Transient Thermal Resistance

Package Outline Dimensions

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

X3-DSN1010-3

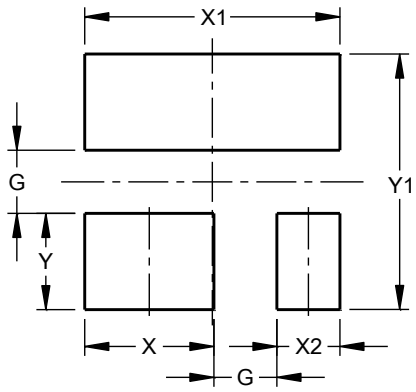


X3-DSN1010-3			
Dim	**Min**	**Max**	**Typ**
A	-	0.29	0.27
A1	0.034	0.046	0.04
A1a	0.015	0.025	0.02
A1b	0.017	0.023	0.02
b	0.18	0.22	0.20
b1	0.39	0.43	0.41
b2	0.79	0.83	0.81
D	0.92	1.00	0.96
E	0.92	1.00	0.96
e	-	-	0.505
e1	-	-	0.505
L	0.285	0.325	0.305
All Dimensions in mm			

Suggested Pad Layout

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

X3-DSN1010-3



Dimensions	Value (in mm)
G	0.200
X	0.410
X1	0.810
X2	0.200
Y	0.305
Y1	0.810

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