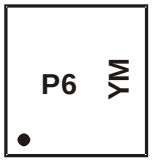
Marking Information

Site 1



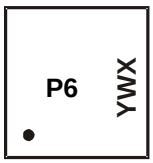
P6 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: H = 2020)
M = Month (ex: 9 = September)

Date Code Key

Year	2015	…	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	C	…	H	I	J	K	L	M	N	O	P	R

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

Site 2



P6 = Product Type Marking Code
YWX = Date Code Marking
Y = Year (ex: 0 = 2020)
W = Week (ex: a = Week 27; z Represents Week 52 and 53)
X = Internal Code (ex: U = Monday)

Date Code Key

Year	2015	…	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	5	…	0	1	2	3	4	5	6	7	8	9

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

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Code	T	U	V	W	X	Y	Z

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}	±8	V
Continuous Drain Current (Note 5) V_{GS} = -4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	-3.8 -3.0	A
	t < 5s	T_A = +25°C T_A = +70°C	I_D	-5.0 -4.0	A
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	-1	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	-15	A
Avalanche Current (L = 0.1mH)			I_{AS}	-12	A
Avalanche Energy (L = 0.1mH)			E_{AS}	8	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P_D	1.4	W
	t < 5s		2.2	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	92	°C/W
	t < 5s		55	
Thermal Resistance, Junction to Case (Note 5)		$R_{\theta JC}$	20	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

Note: 5. Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
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}	—	—	-1.0	µA	V_{DS} = -12V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.4	—	-1	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	37	61	mΩ	V_{GS} = -4.5V, I_D = -3.6A
		—	47	81		V_{GS} = -2.5V, I_D = -3.2A
		—	63	115		V_{GS} = -1.8V, I_D = -1.0A
Diode Forward Voltage	V_{SD}	—	-0.65	-1.2	V	V_{GS} = 0V, I_S = -4.5A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	915	—	pF	V_{DS} = -6V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	225	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	183	—	pF	
Gate Resistance	R_g	—	56.9	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	—	10.7	—	nC	V_{DS} = -6V, I_D = -4.3A
Total Gate Charge (V_{GS} = -8V)		—	17.9	—	nC	
Gate-Source Charge	Q_{gs}	—	1.7	—	nC	
Gate-Drain Charge	Q_{gd}	—	3.0	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	5.7	—	ns	V_{DD} = -6V, V_{GS} = -4.5V, R_L = 1.6Ω, R_G = 1Ω
Turn-On Rise Time	t_R	—	11.5	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	27.8	—	ns	
Turn-Off Fall Time	t_F	—	26.4	—	ns	

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to product testing.

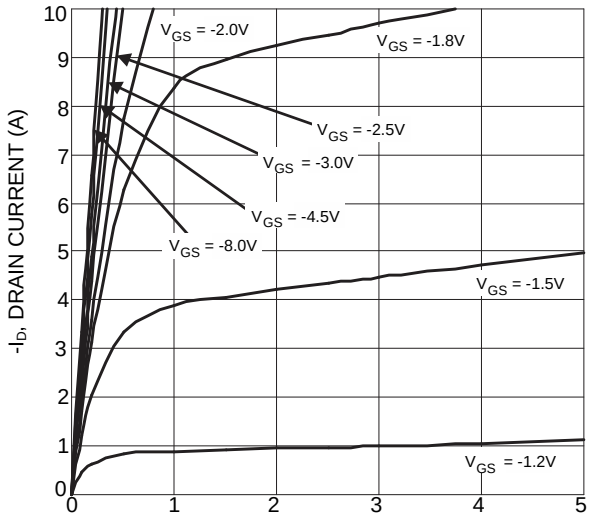


Figure 1 Typical Output Characteristics

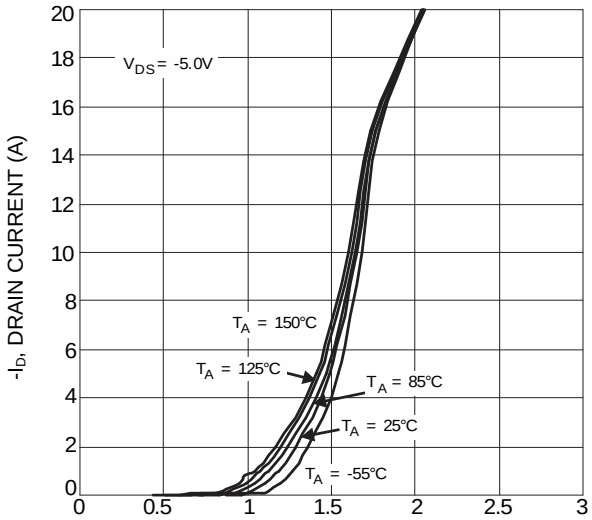


Figure 2 Typical Transfer Characteristics

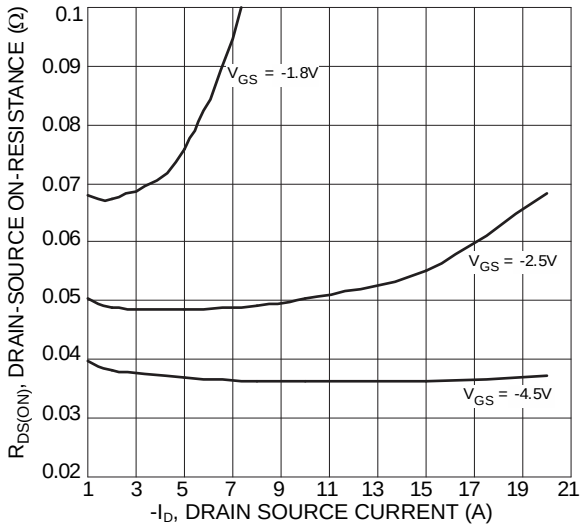


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

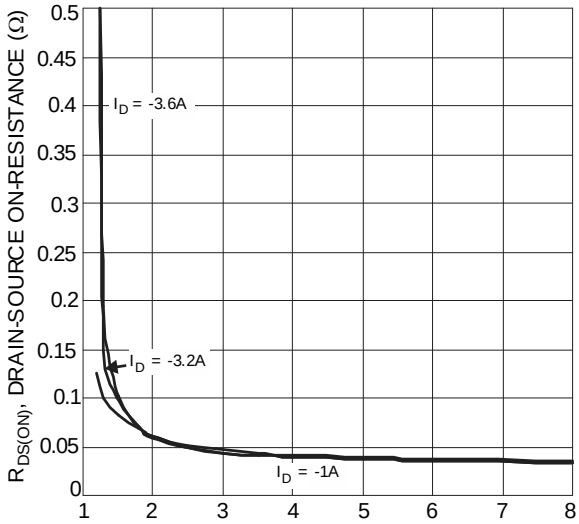


Figure 4 Typical Transfer Characteristics

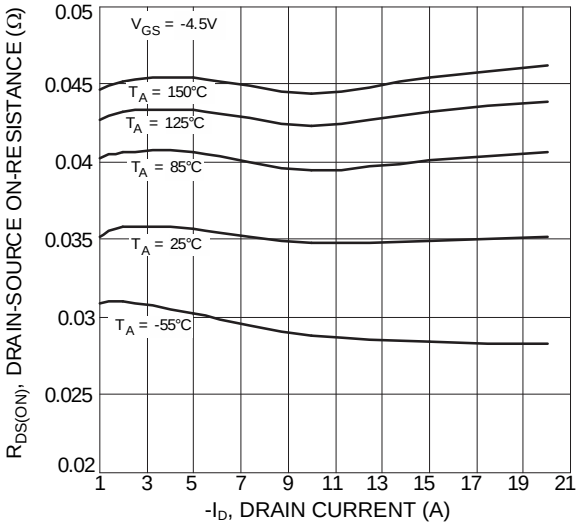


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

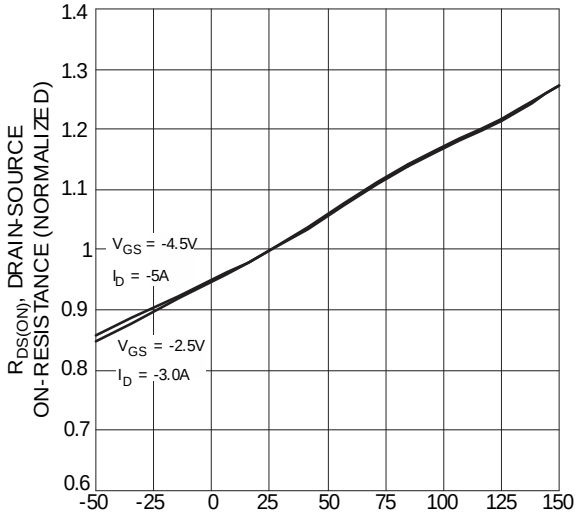


Figure 6 On-Resistance Variation with Temperature

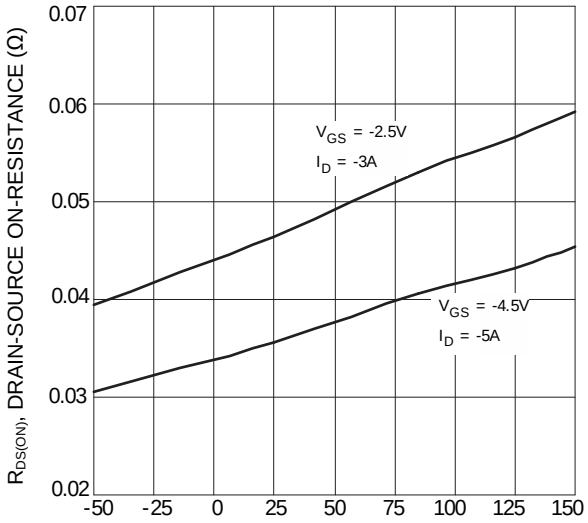


Figure 7 On-Resistance Variation with Temperature

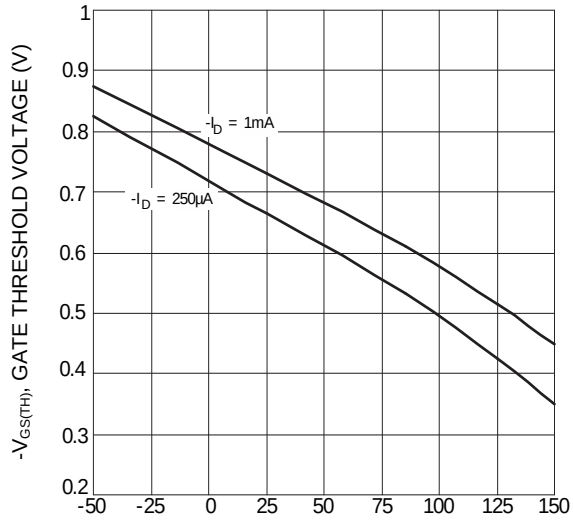


Figure 8 Gate Threshold Variation vs. Junction Temperature

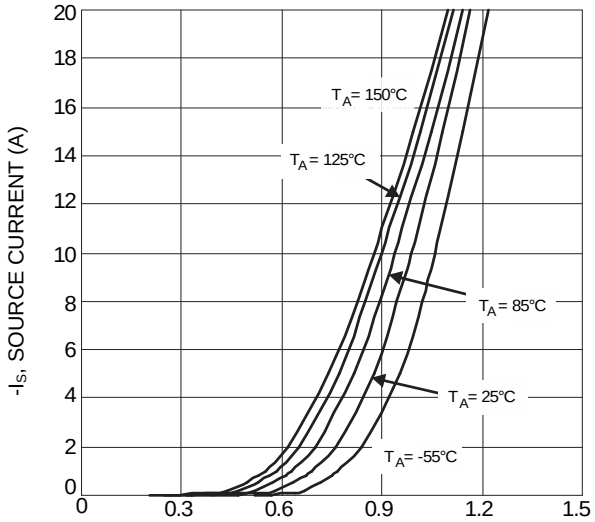


Figure 9 Diode Forward Voltage vs. Current

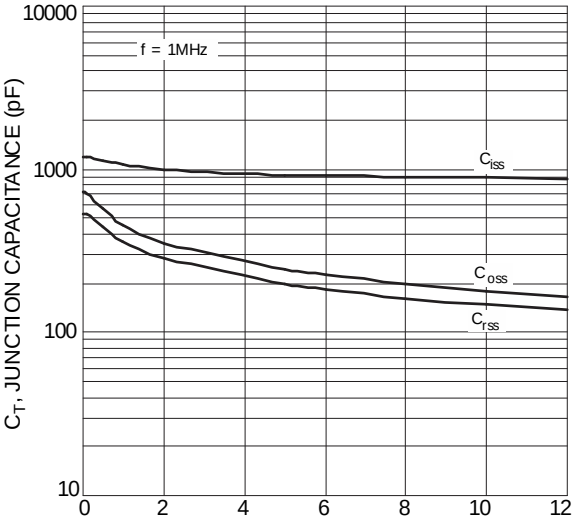


Figure 10 Typical Junction Capacitance

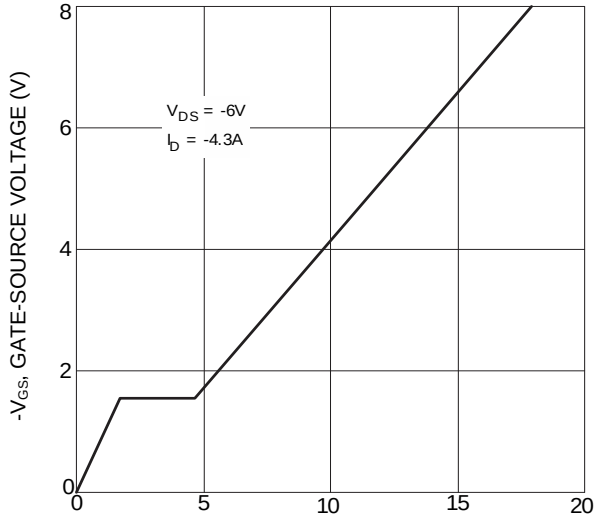


Figure 11 Gate Charge

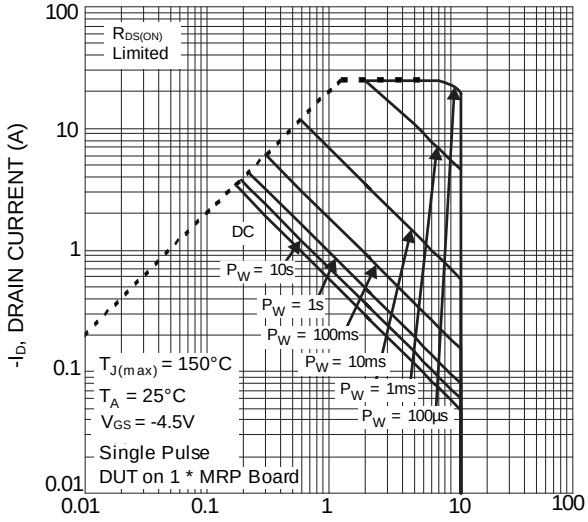


Figure 12 SOA, Safe Operation Area

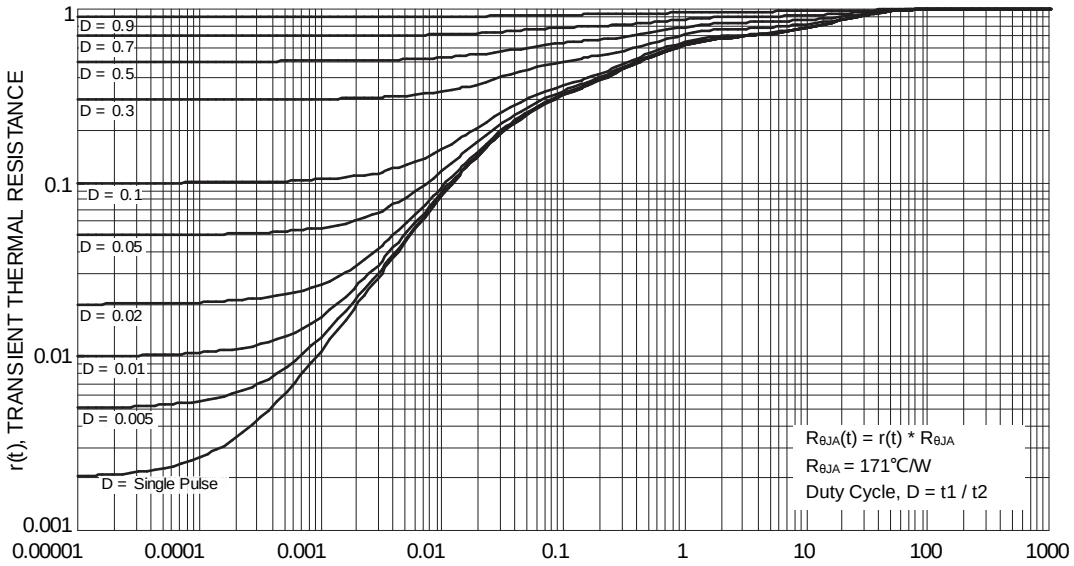
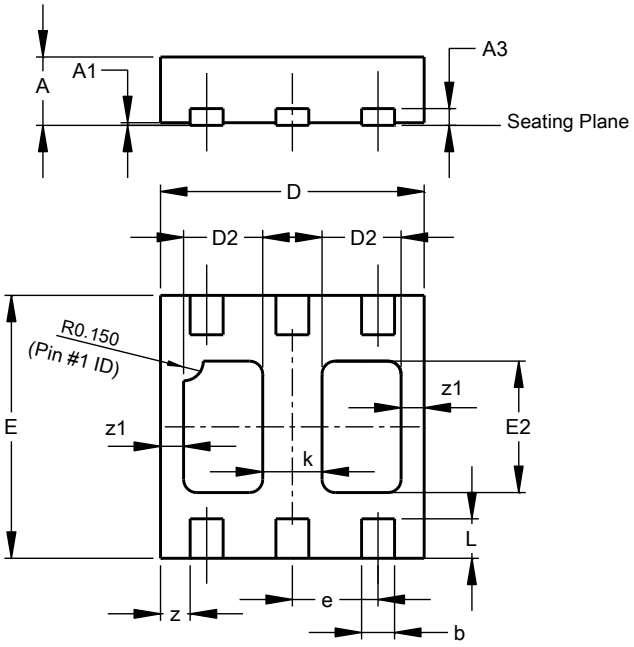


Figure 13 Transient Thermal Resistance

Package Outline Dimensions

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

U-DFN2020-6 (Type B)

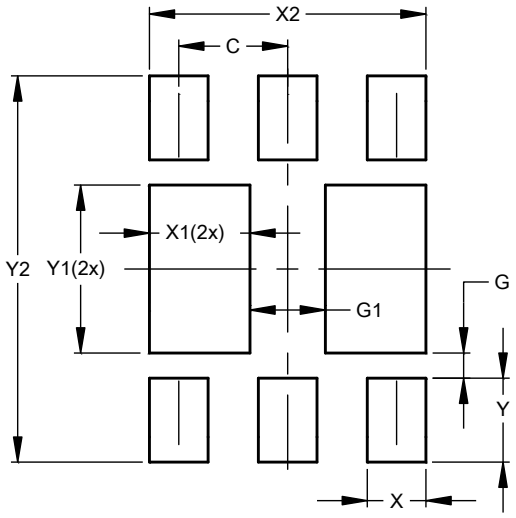


U-DFN2020-6 Type B			
Dim	**Min**	**Max**	**Typ**
A	0.545	0.605	0.575
A1	0.00	0.05	0.02
A3	-	-	0.13
b	0.20	0.30	0.25
D	1.95	2.075	2.00
D2	0.50	0.70	0.60
e	-	-	0.65
E	1.95	2.075	2.00
E2	0.90	1.10	1.00
k	-	-	0.45
L	0.25	0.35	0.30
z	-	-	0.225
z1	-	-	0.175
All Dimensions in mm			

Suggested Pad Layout

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

U-DFN2020-6 (Type B)



Dimensions	Value (in mm)
C	0.650
G	0.150
G1	0.450
X	0.350
X1	0.600
X2	1.650
Y	0.500
Y1	1.000
Y2	2.300

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