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 V_{GS} = -4.5V (Note 10)	Steady State	T_C = +25°C T_C = +70°C	I_D	-20 -16	A
	t<5s (Note 6)	T_A = +25°C	I_D	-12.6	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	-55	A
Maximum Body Diode Continuous Current (Note 6)			I_S	-2.8	A
Avalanche Current (Note 7), L = 0.1mH			I_{AS}	-21	A
Avalanche Energy (Note 7,) L = 0.1mH			E_{AS}	22	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	0.72	W
	T_A = +70°C		0.46	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	172	°C/W
	t<5s		130	
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	2.11	W
	T_A = +70°C		1.36	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	59	°C/W
	t<5s		44	
Thermal Resistance, Junction to Case (Note 6)	Steady State	$R_{\theta JC}$	9.0	
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	µA	V_{DS} = -10V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.3	-0.5	-0.9	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	11	15	mΩ	V_{GS} = -4.5V, I_D = -5A
			12	20		V_{GS} = -3.7V, I_D = -5A
			15	30		V_{GS} = -2.5V, I_D = -4A
			20	40		V_{GS} = -1.8V, I_D = -1A
Diode Forward Voltage	V_{SD}	—	-0.8	-1.2	V	V_{GS} = 0V, I_S = -10A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	1344	—	pF	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	342	—		
Reverse Transfer Capacitance	C_{rss}	—	297	—		
Gate Resistance	R_g	—	15	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	—	19.5	—	nC	V_{DS} = -6V, I_D = -10A
Total Gate Charge (V_{GS} = -8V)	Q_g	—	31	—		
Gate-Source Charge	Q_{gs}	—	2.1	—		
Gate-Drain Charge	Q_{gd}	—	7.9	—		
Turn-On Delay Time	$t_{D(ON)}$	—	6.0	—	ns	V_{DS} = -6V, V_{GS} = -4.5V, R_g = 1Ω, I_D = -8A
Turn-On Rise Time	t_R	—	32	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	71	—		
Turn-Off Fall Time	t_F	—	85	—		
Reverse Recovery Time	t_{RR}	—	46	—	ns	I_F = -12A, di/dt = 500A/µs
Reverse Recovery Charge	Q_{RR}	—	44	—	nC	

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. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.
10. Package limited.

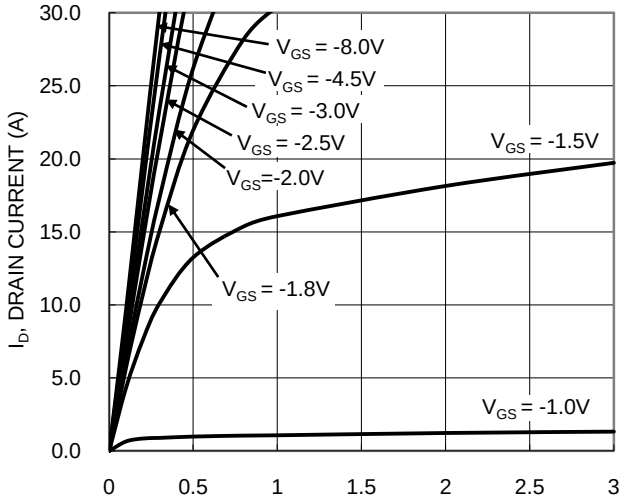


Figure 1. Typical Output Characteristic

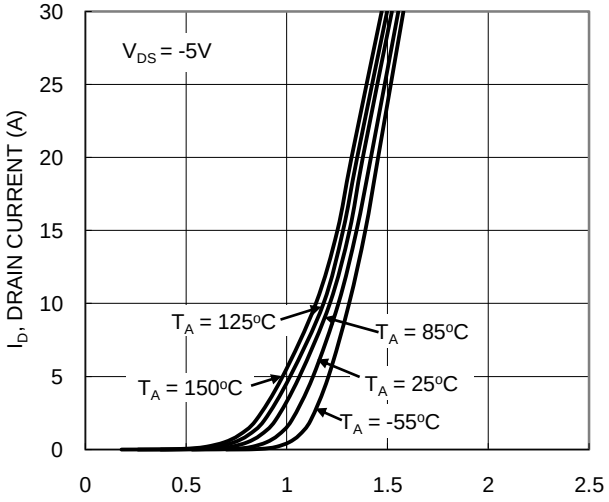


Figure 2. Typical Transfer Characteristic

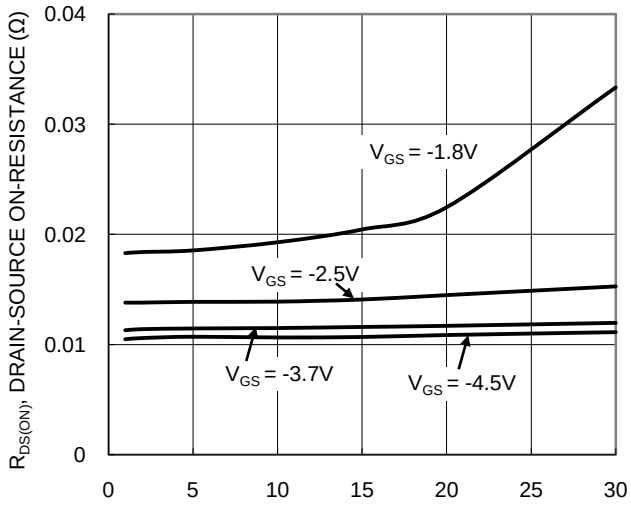


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

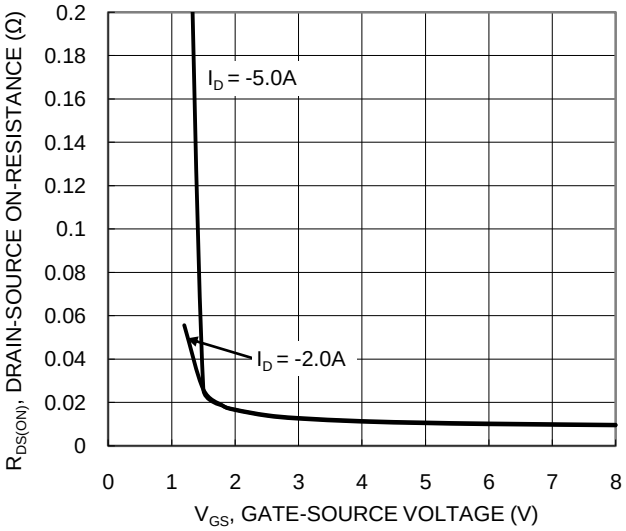


Figure 4. Typical Transfer Characteristic

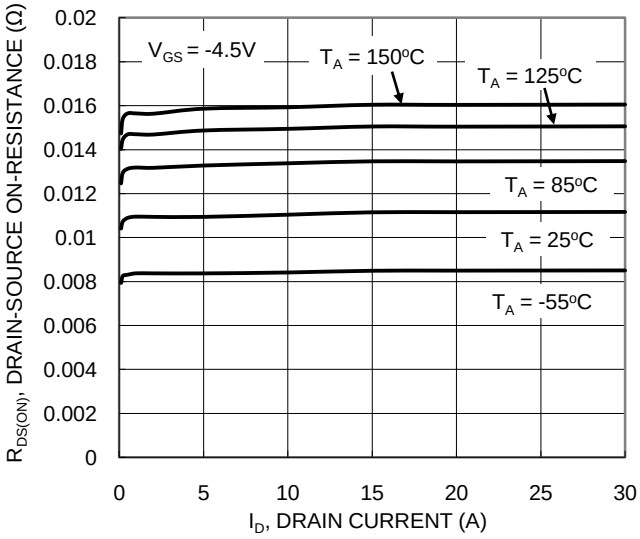


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

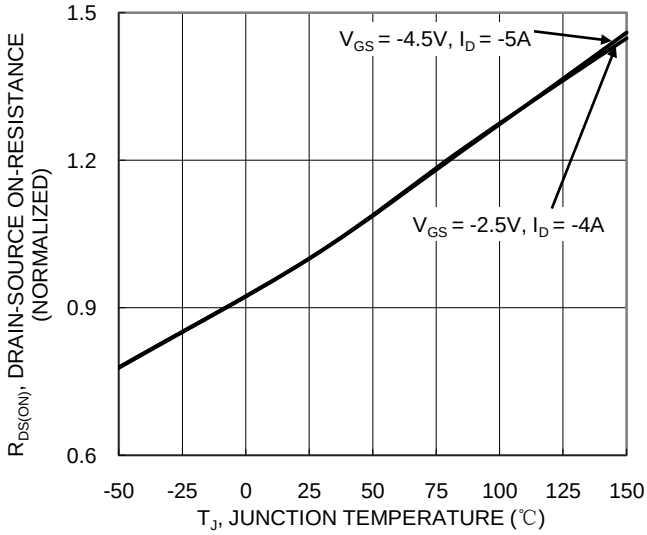


Figure 6. On-Resistance Variation with Temperature

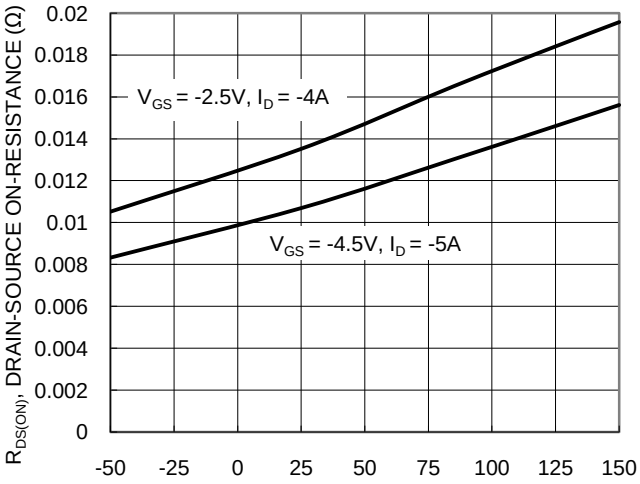


Figure 7. On-Resistance Variation with Temperature

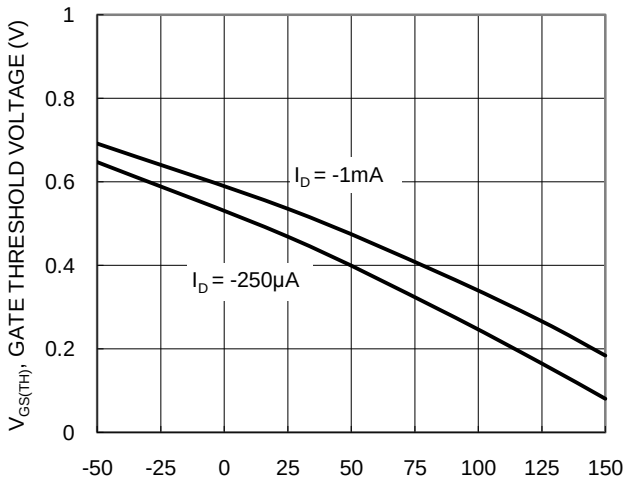


Figure 8. Gate Threshold Variation vs. Junciton Temperature

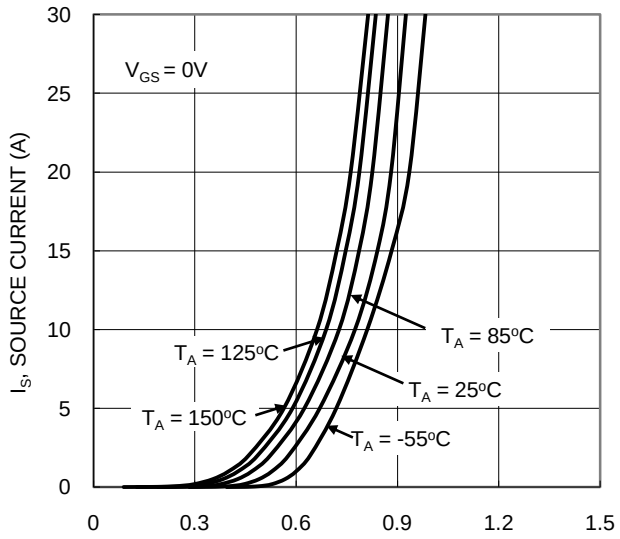


Figure 9. Diode Forward Voltage vs. Current

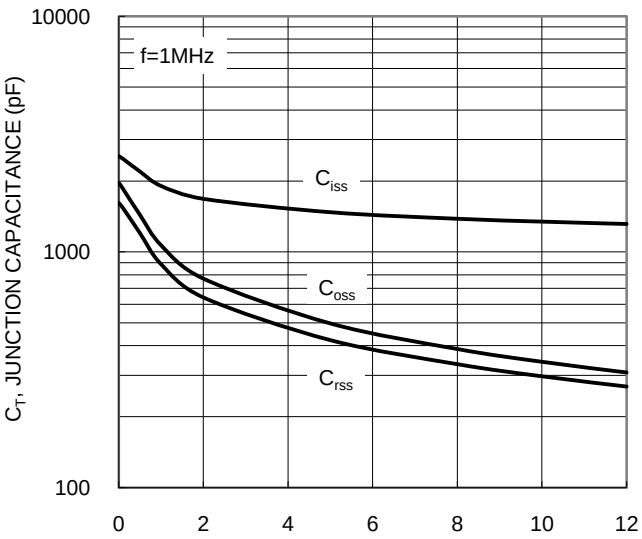


Figure 10. Typical Junction Capacitance

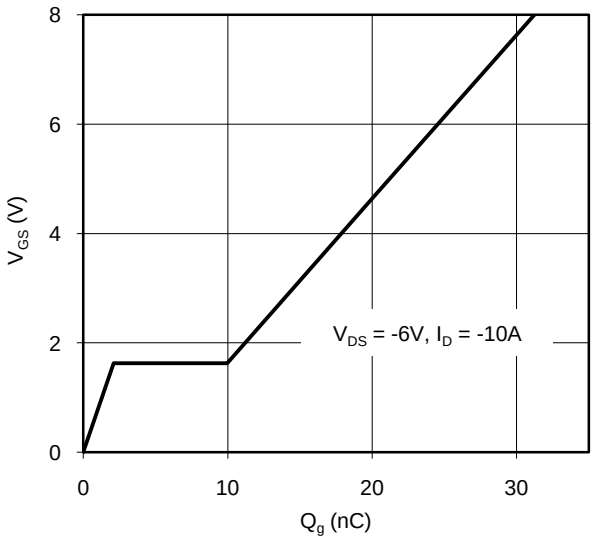


Figure 11. Gate Charge

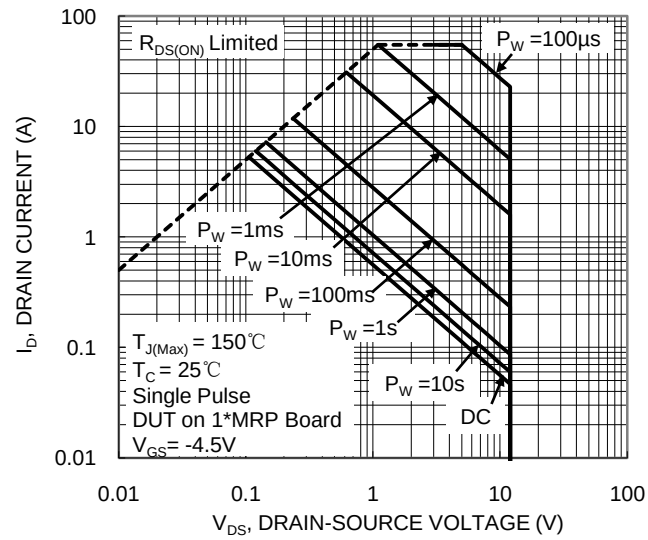


Figure 12. SOA, Safe Operation Area

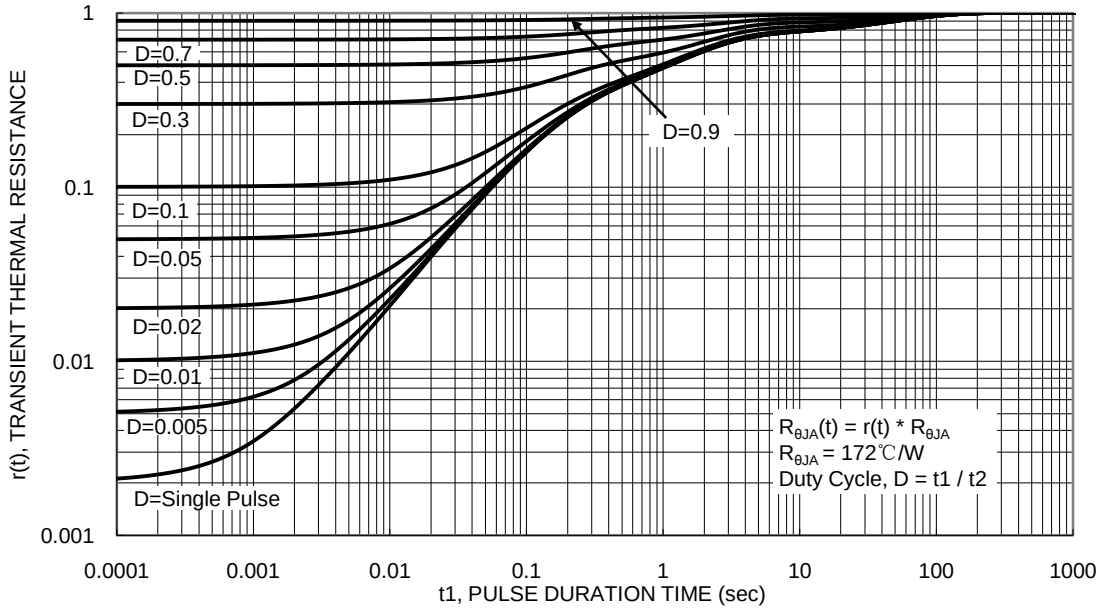
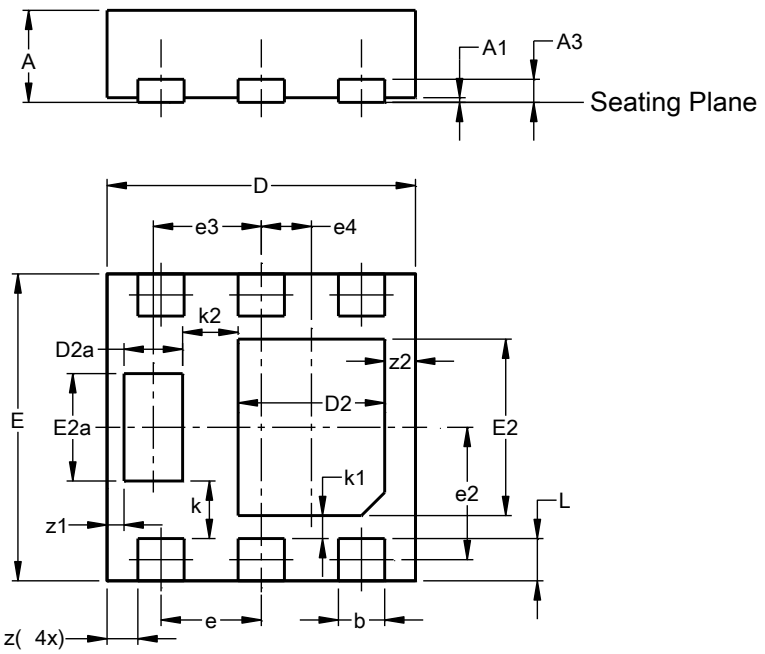


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

U-DFN2020-6 (Type F)



U-DFN2020-6 (Type F)			
Dim	**Min**	**Max**	**Typ**
A	0.57	0.63	0.60
A1	0.00	0.05	0.03
A3	-	-	0.15
b	0.25	0.35	0.30
D	1.95	2.05	2.00
D2	0.85	1.05	0.95
D2a	0.33	0.43	0.38
E	1.95	2.05	2.00
E2	1.05	1.25	1.15
E2a	0.65	0.75	0.70
e	0.65 BSC		
e2	0.863 BSC		
e3	0.70 BSC		
e4	0.325 BSC		
k	0.37 BSC		
k1	0.15 BSC		
k2	0.36 BSC		
L	0.225	0.325	0.275
z	0.20 BSC		
z1	0.110 BSC		
z2	0.20 BSC		
All Dimensions in mm			

Suggested Pad Layout

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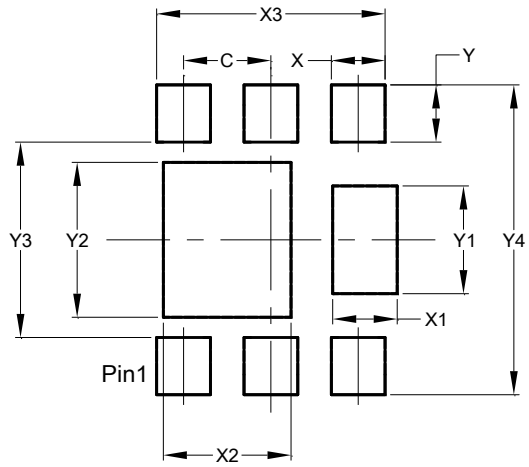
U-DFN2020-6 (Type F)



Dimensions	Value (in mm)
C	0.650
X	0.400
X1	0.480
X2	0.950
X3	1.700
Y	0.425
Y1	0.800
Y2	1.150
Y3	1.450
Y4	2.300

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