	Value	Unit
	80	V
	3.0	V
	148	A
	3.8	mΩ

	Marking	MSL	Form		Tube(pcs)	Per Carton (pcs)
	SH0804N	N/A	Tube		50	5000

Symbol				Unit
V_{DS}				V
V_{GS}				V
I_D	Continuous Drain Current	T_C = 25°C T_C = 100°C		
I_{DM}				A
E_{AS}				mJ
P_D	Power Dissipation	T_C = 25°C T_C = 100°C	179 71	
T_J $_{STG}$	Junction & Storage Temperature Range			°C

Symbol	Parameter	Max	Unit
R	Thermal Resistance, Junction to Ambient(3)	31	°C/W
R	Thermal Resistance, Junction to Case	0.7	

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	80	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 64V, V_{GS} = 0V	-	-	1.0	μ
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.1	3.0	4.0	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 20A	-	3.8	4.2	mΩ
Dynamic Characteristics						
R_g	Gate Resistance	f = 1MHz	-	0.7	-	Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 40V, f = 1MHz	-	4769	6439	pF
C_{oss}	Output Capacitance		-	809	1092	pF
C_{rss}	Reverse Transfer Capacitance		-	12	16	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 40V, I_D = 20A	-	67	-	nC
Q_{gs}	Gate Source Charge		-	26	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	12	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 40V I_D= 20A, R_{GEN} = 3Ω	-	23	-	ns
t_r	Turn-On Rise Time		-	30	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	36	-	ns
t_f	Turn-Off Fall Time		-	10	-	ns
Body Diode Characteristics						
I_S	Maximum Continuous Body Diode Forward Current		-	-	148	A
I_{SM}	Maximum Pulsed Body Diode Forward Current		-	-	593	A
V_{SD}	Body Diode Forward Voltage	V_{GS} = 0V, I_S = 20A	-		1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 20A, di/dt = 100A/us	46	64	86	ns
Qrr	Body Diode Reverse Recovery Charge		-	139	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25C, V_{DD}=40V, V_{GS}=10V, R_G=25ohm, L=3mH, I_{AS}=18.2A, V_{DD}=0V during time in avalanche.

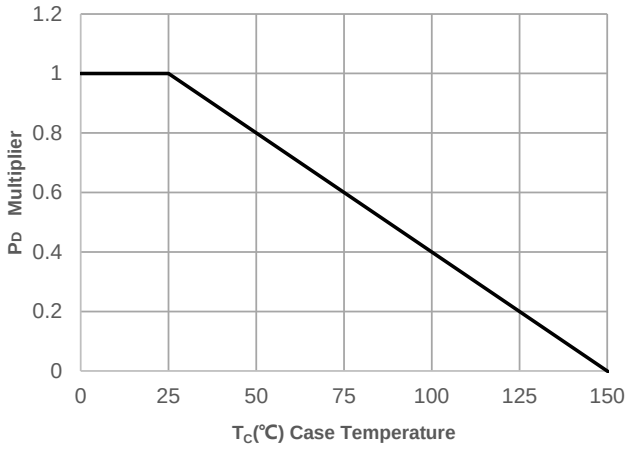
3. R is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB.

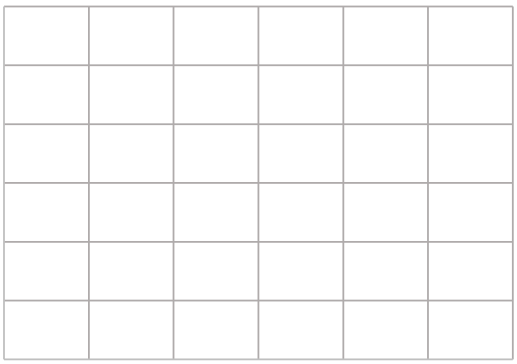
4. Pulse Test: Pulse Width ≤ ≤ 0.5%.

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Typical Performance Characteristics

Figure 1: Power De-rating





Typical Performance Characteristics

Figure 5: Output Characteristics

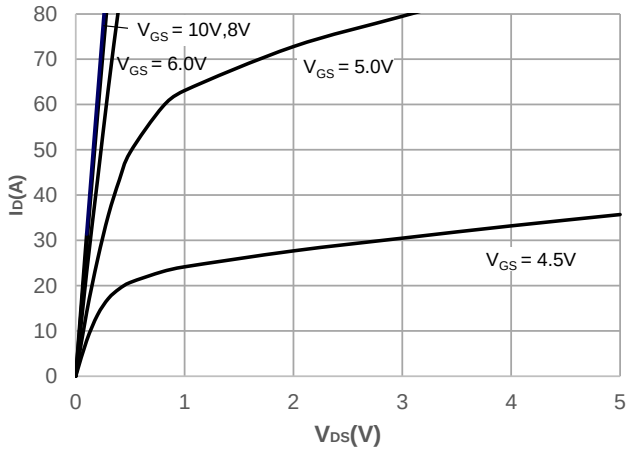


Figure 6: Typical Transfer Characteristics

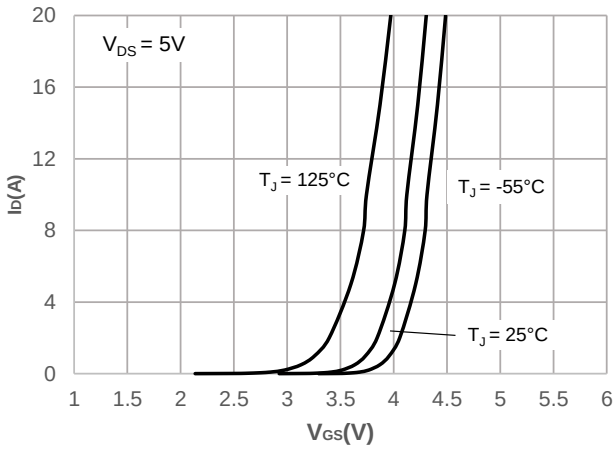


Figure 7: On-resistance vs. Drain Current

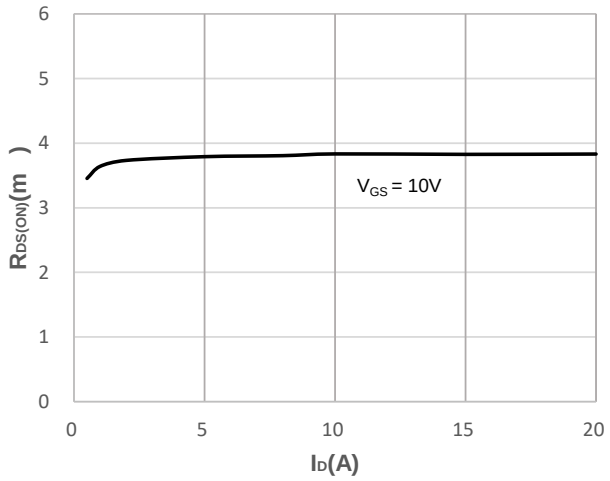


Figure 8: Body Diode Characteristics

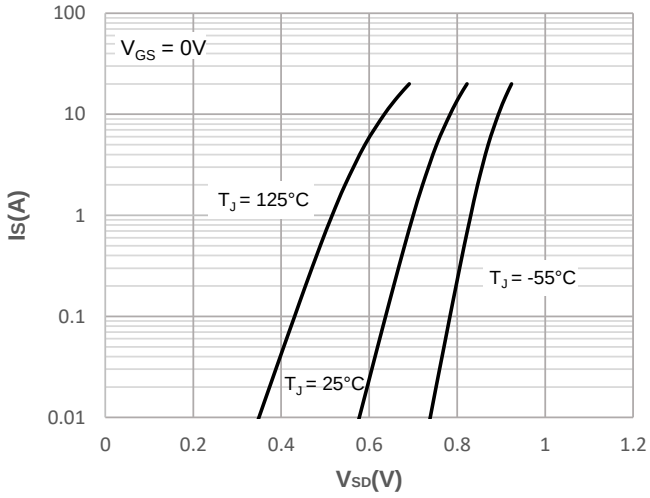


Figure 9: Gate Charge Characteristics

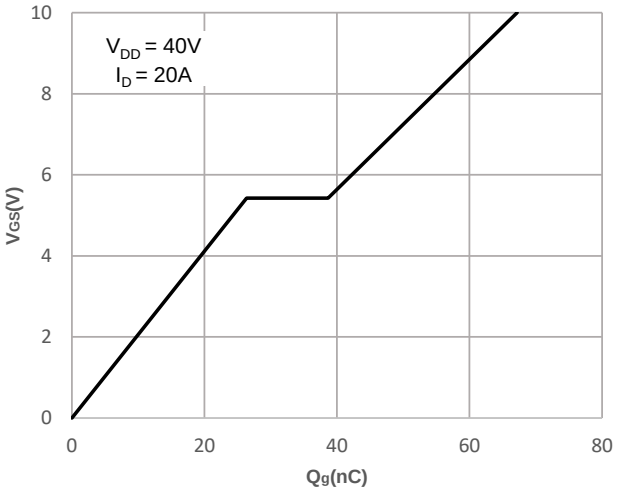
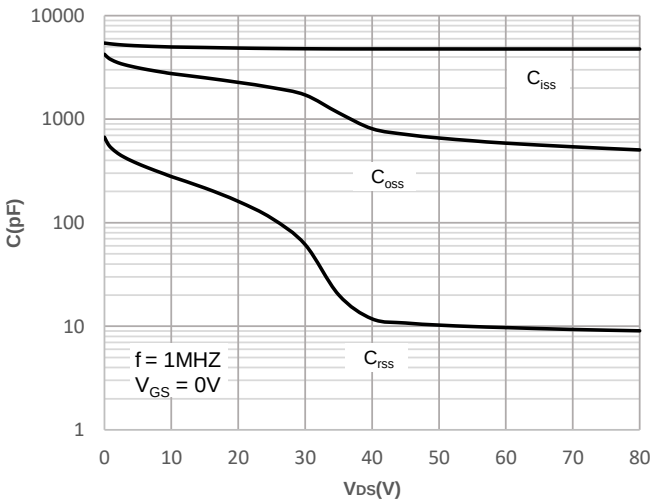


Figure 10: Capacitance Characteristics



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Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

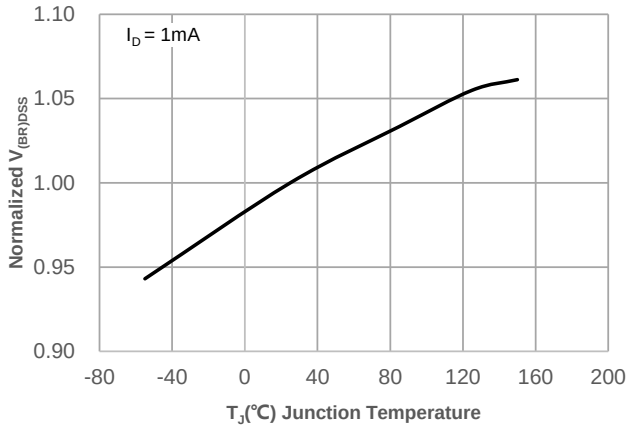


Figure 12: Normalized on Resistance vs. Junction Temperature

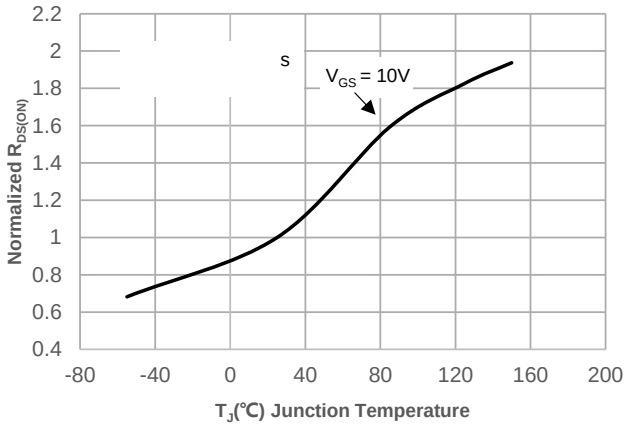


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

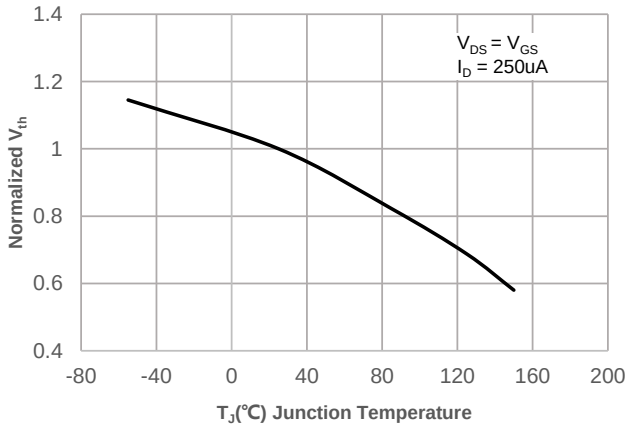


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

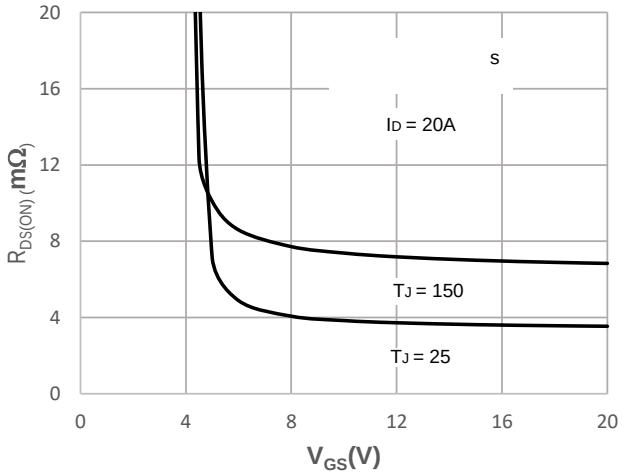
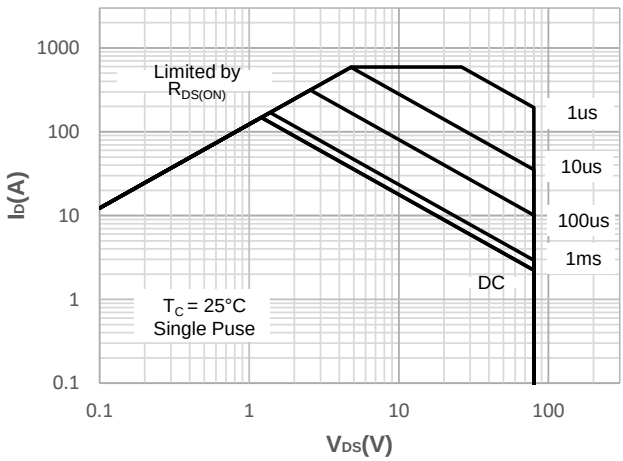


Figure 15: Maximum Safe Operating Area



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Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform

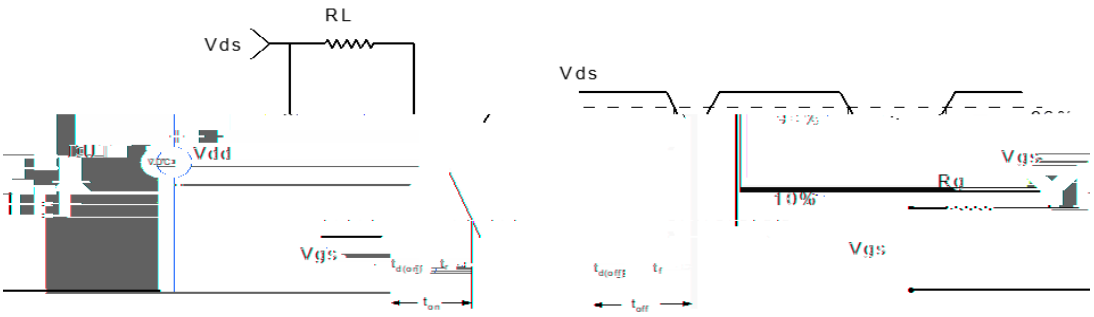


Figure 2: Resistive Switching Test Circuit & Waveform

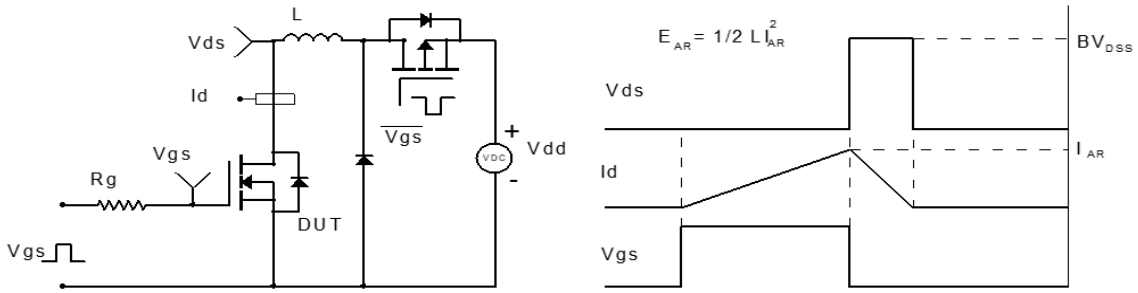


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

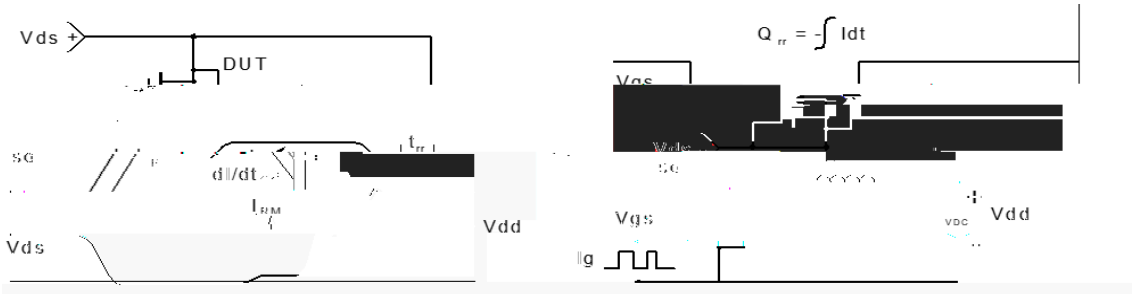


Figure 4: Diode Recovery Test Circuit & Waveform

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Package Mechanical Data(TO-220-3L)