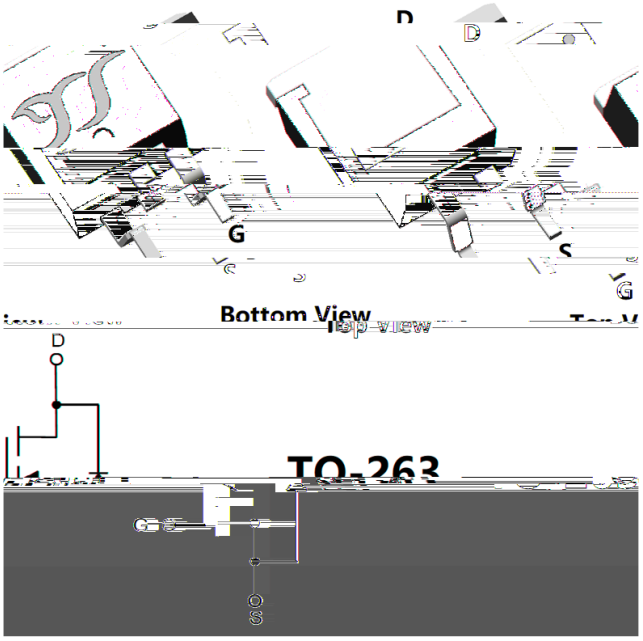
N-Channel Enhancement Mode Field Effect Transistor



Product Summary

V_{DS}	100V
I_D	240A
$R_{DS(ON)}$(at V_{GS}=10V)	2.6m
$R_{DS(ON)}$(at V_{GS}=6V)	3.1m

100% EAS Tested
100% V_{DS} Tested

General Description

Split Gate Trench MOSFET technology
Excellent package for heat dissipation
High density cell design for low $R_{DS(ON)}$
Moisture Sensitivity Level 1
Epoxy Meets UL 94 V-0 Flammability Rating
Halogen Free

Applications

Load switch
Battery management
Solar

Absolute Maximum Ratings (T_A=25 unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	24	A
	T_A=100℃		15	
	T_C=25℃		240	
	T_C =100℃		151	
Pulsed Drain Current [A]		I_{DM}	960	A
Avalanche energy [B]		EAS	2030.6	mJ
Total Power Dissipation [C]	T_A=25℃	P_D	3.1	W
	T_A=100℃		1.25	
	T_C=25℃		208	
	T_C =100℃		83	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55 +150	℃

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	Steady-State	R	32	40	℃/W
Thermal Resistance Junction-to-Case	Steady-State	R	0.5	0.6	

Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJB240G10M	F1/F2	YJB240G10M	800	/	8000/4000	13 reel

Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	-	-	1	
		V_{DS}=100V, V_{GS}=0V, Tj=150℃	-	-	100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D	2	2.8	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=50A	-	2	2.6	
		V_{GS}=10V, I_D=20A	-	2	2.6	
		V_{GS}=6V, I_D=20A	-	2.3	3.1	
Diode Forward Voltage	V_{SD}	I_S=50A, V_{GS}=0V	-	-	1.2	V
Gate resistance	R_G	f=1MHz	-	1	-	
Maximum Body-Diode Continuous Current	I_S		-	-	240	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=50V, V_{GS}=0V, f=1MHz	-	13500	-	pF
Output Capacitance	C_{oss}		-	4500	-	
Reverse Transfer Capacitance	C_{rss}		-	53	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=150A	-	257	-	nC
Gate-Source Charge	Q_{gs}		-	89	-	
Gate-Drain Charge	Q_{gd}		-	88	-	
Reverse Recovery Charge	Q_{rr}	I_F=150A, di/dt=100A/us	-	374	-	nC
Reverse Recovery Time	t_{rr}		-	162	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=50V, I_D=150A R_{GEN}=2.2	-	51	-	ns
Turn-on Rise Time	t_r		-	158	-	
Turn-off Delay Time	$t_{D(off)}$		-	98	-	
Turn-off fall Time	t_f		-	52	-	

A. Repetitive rating; pulse width limited by max. junction temperature.
B. T_J=25℃, V_G=10V, R_G 5mH, IAS=28.5A.
C. P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
D. The value of R is measured with the device mounted on the 40mm*40mm*1.1mm FR-4 PCB board with 1 in^2 pad of 2oz. Copper, in the still air environment with TA =25 .The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.

Typical Electrical and Thermal Characteristics Diagrams

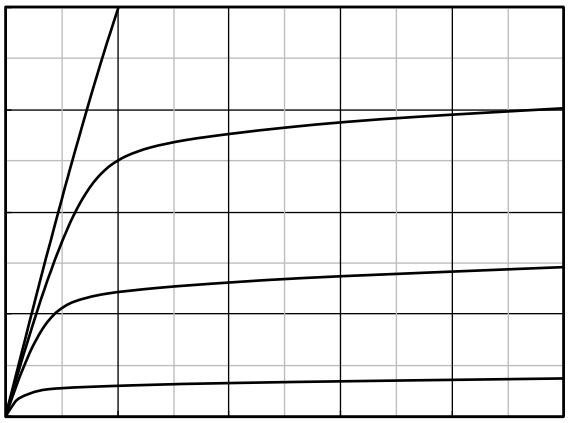


Figure 1. Output Characteristics

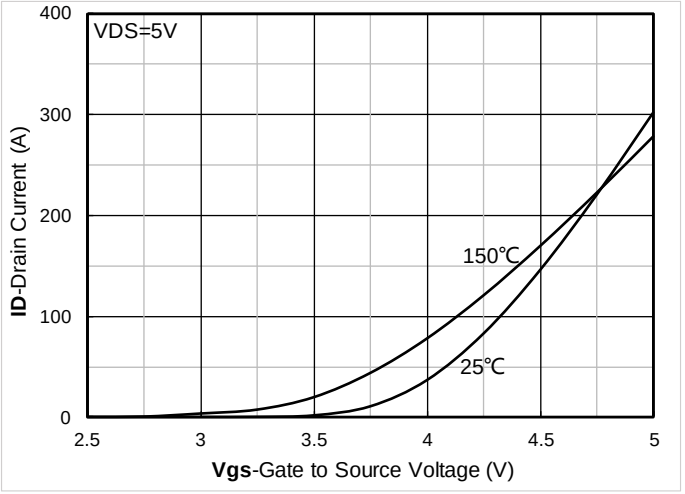


Figure 2. Transfer Characteristics

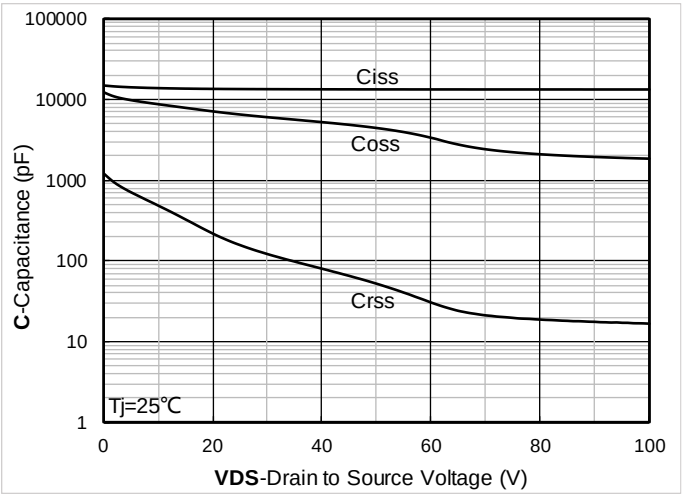


Figure 3. Capacitance Characteristics

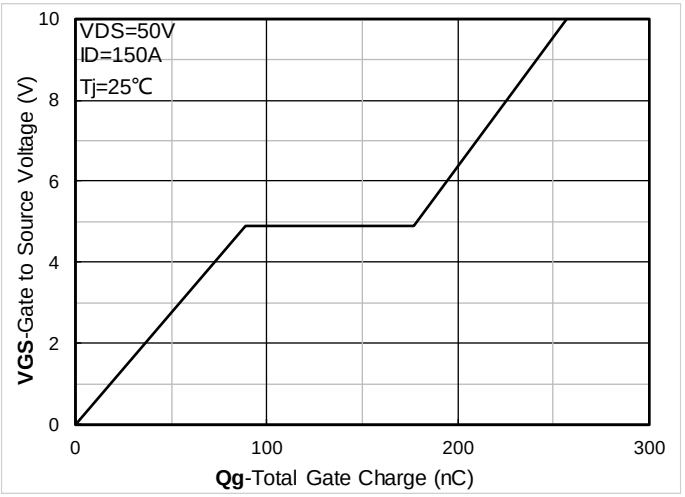


Figure 4. Gate Charge

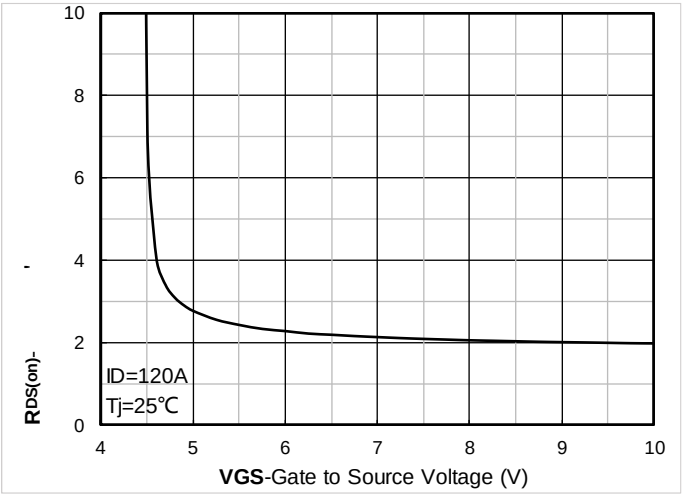


Figure 5. On-Resistance vs Gate to Source Voltage

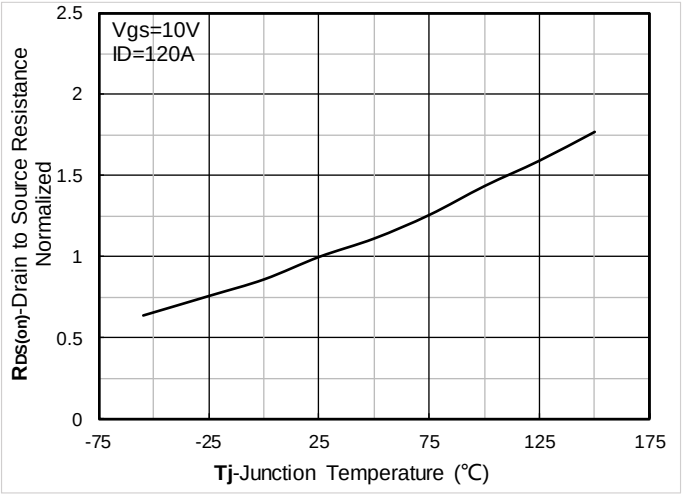


Figure 6. Normalized On-Resistance

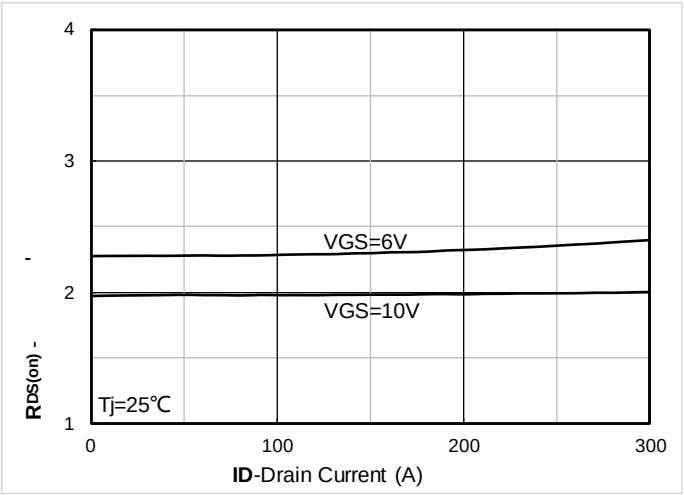


Figure 7. $R_{DS(on)}$ VS Drain Current

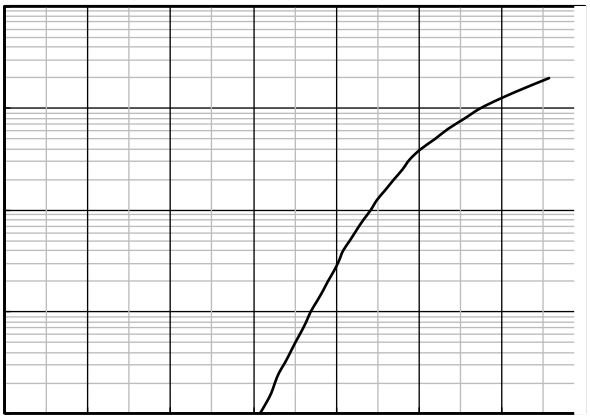


Figure 8. Forward characteristics of reverse diode

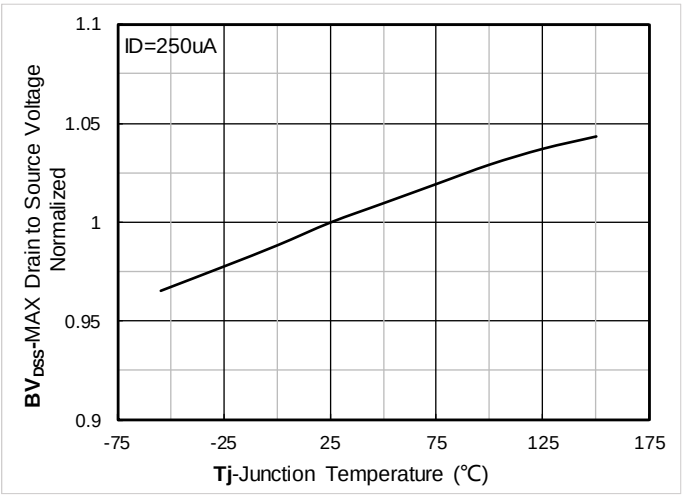


Figure 9. Normalized breakdown voltage

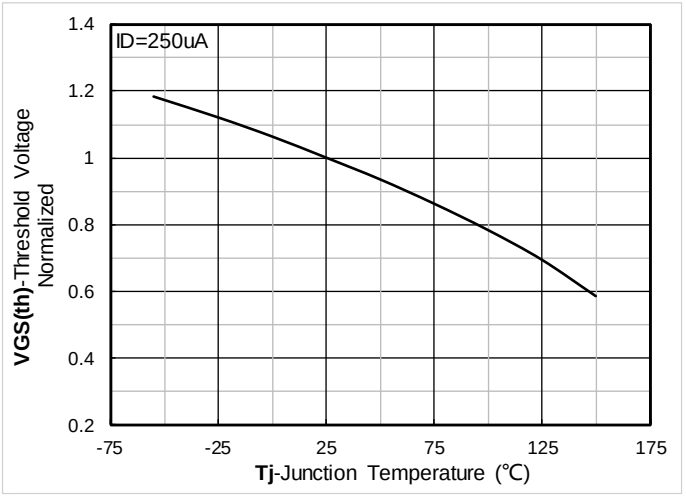


Figure 10. Normalized Threshold voltage

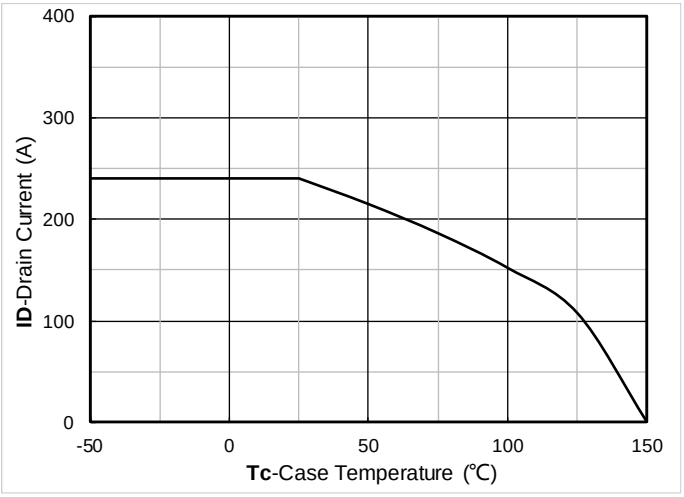


Figure 11. Current dissipation

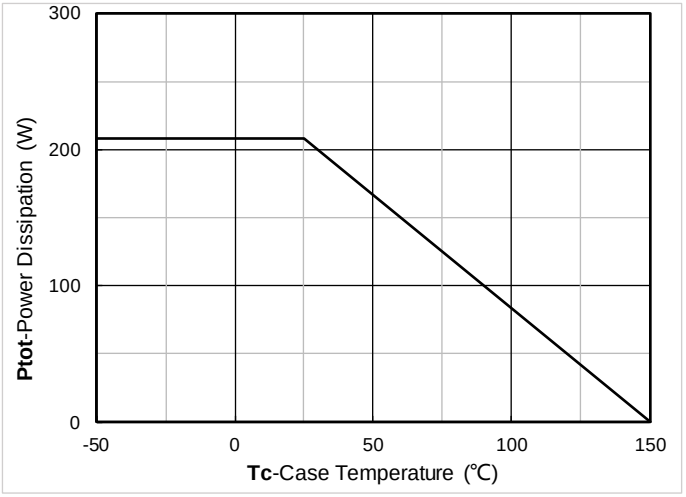


Figure 12. Power dissipation

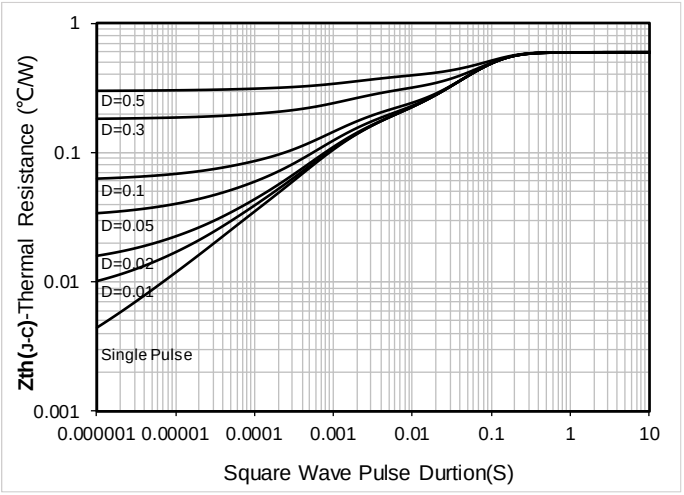


Figure 13. Maximum Transient Thermal Impedance

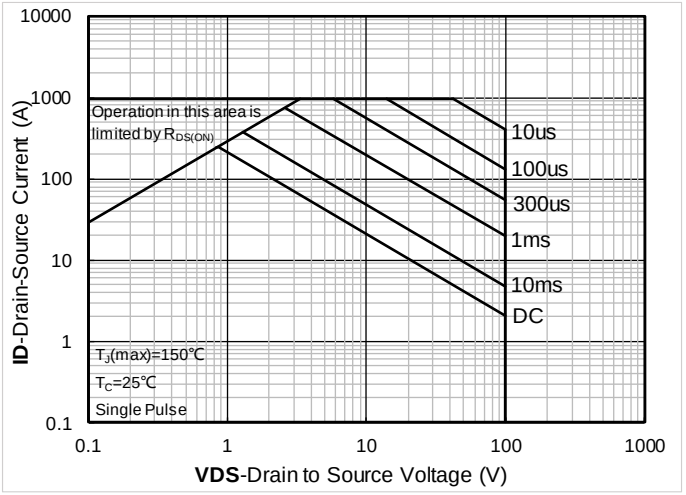


Figure 14. Safe Operation Area

Test Circuits & Waveforms

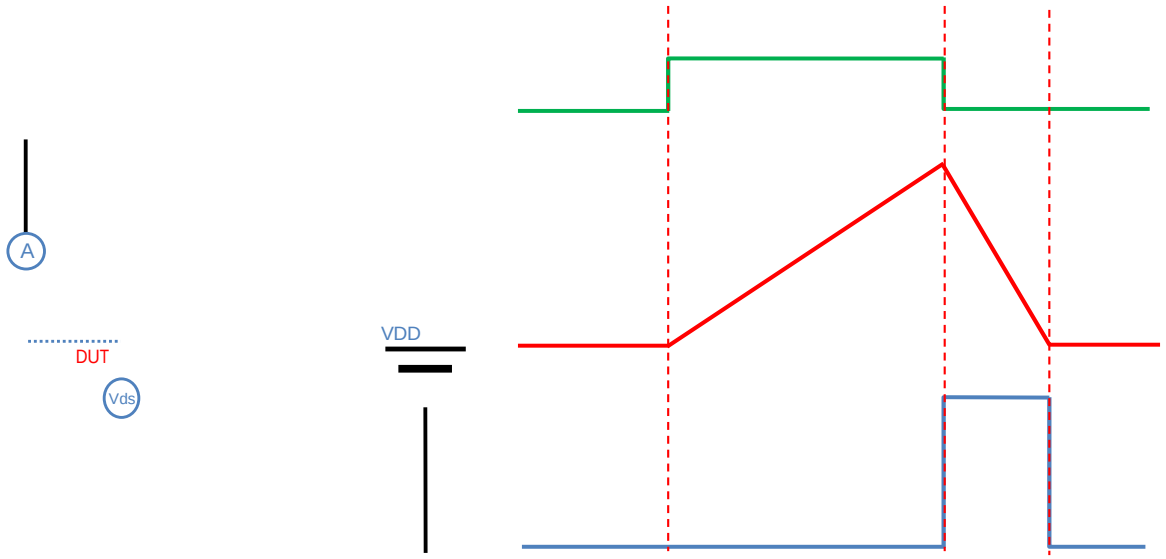


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

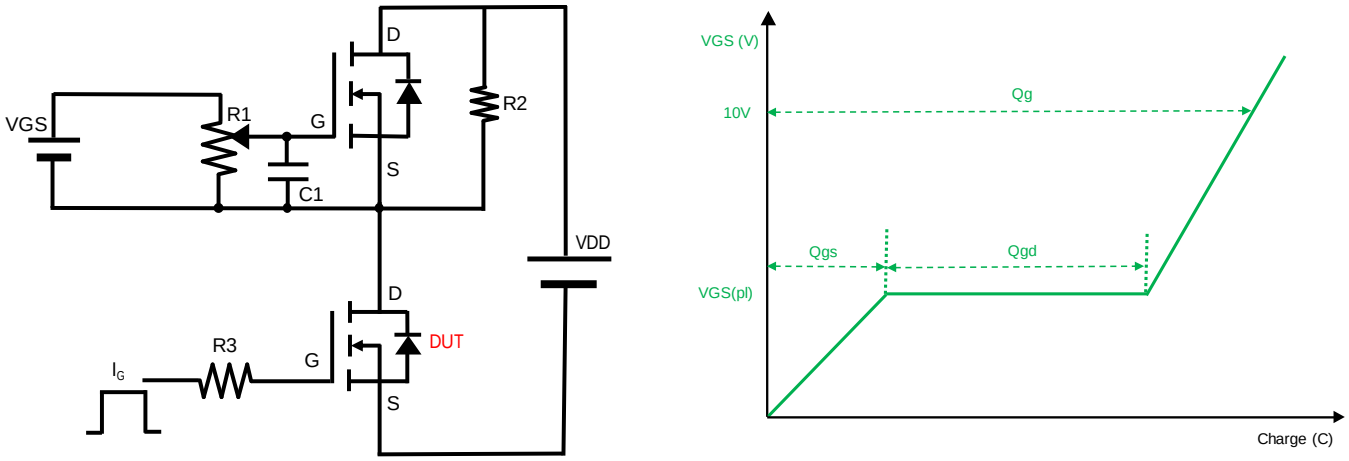


Figure B. Gate Charge Test Circuit & Waveform

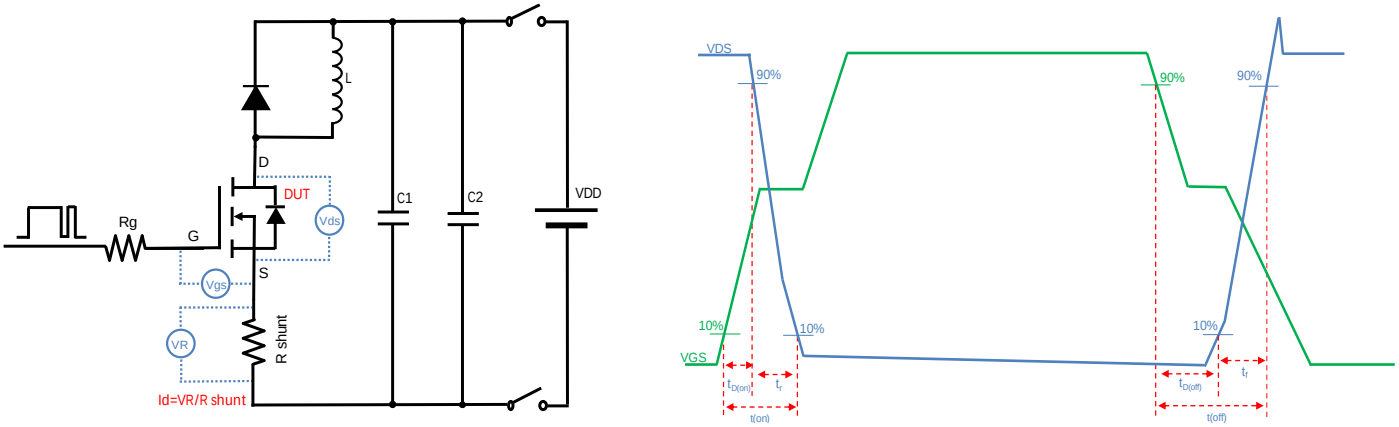


Figure C. Resistive Switching Test Circuit & Waveform

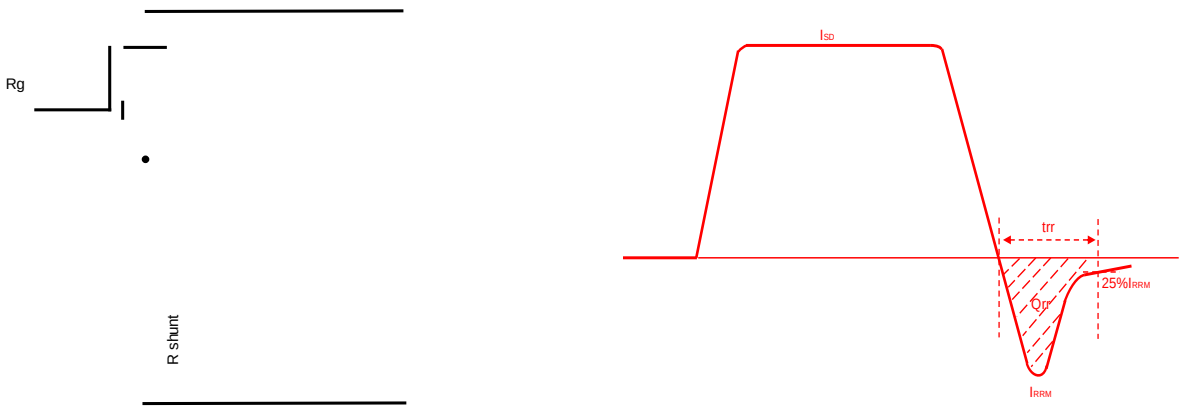
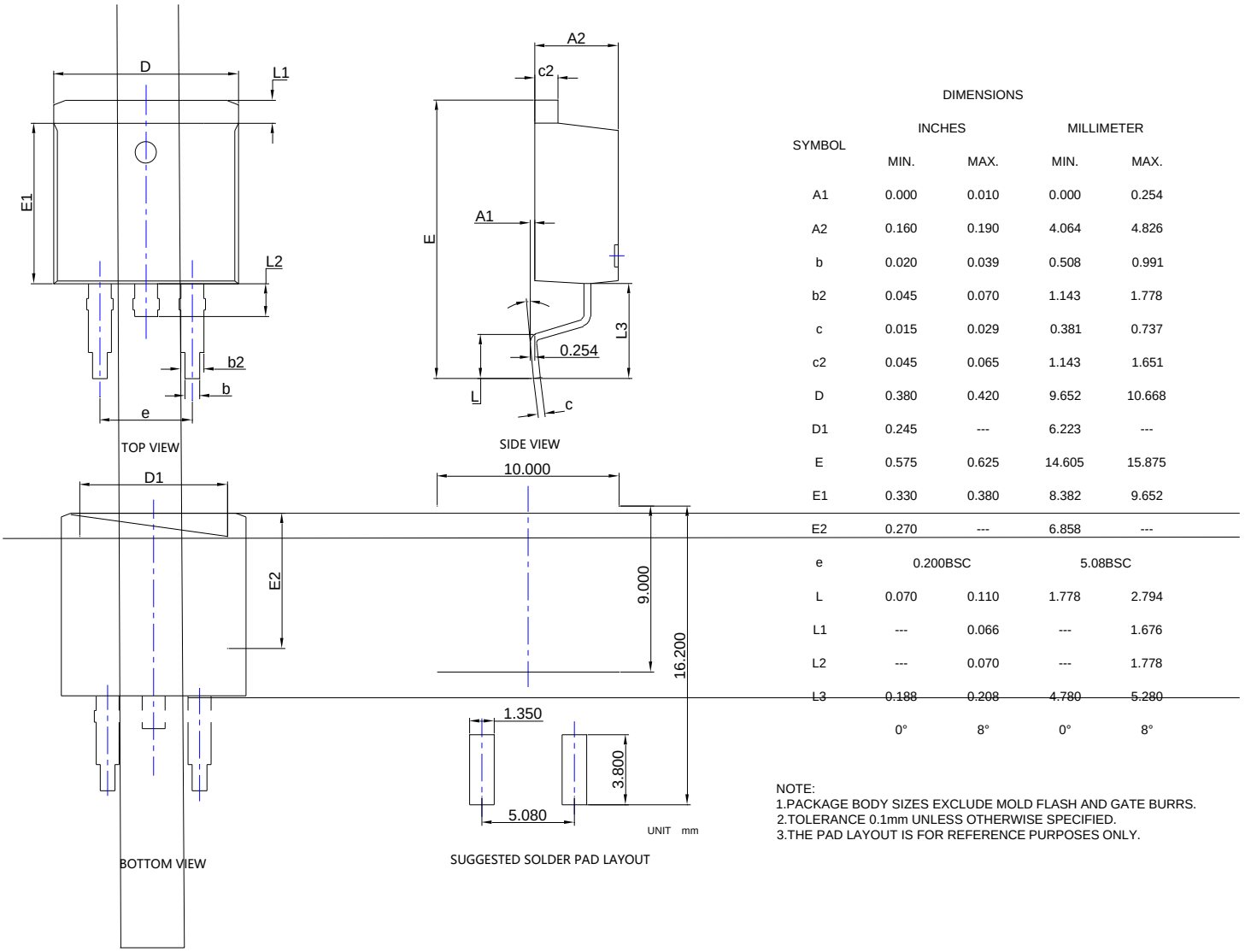


Figure D. Diode Recovery Test Circuit & Waveform

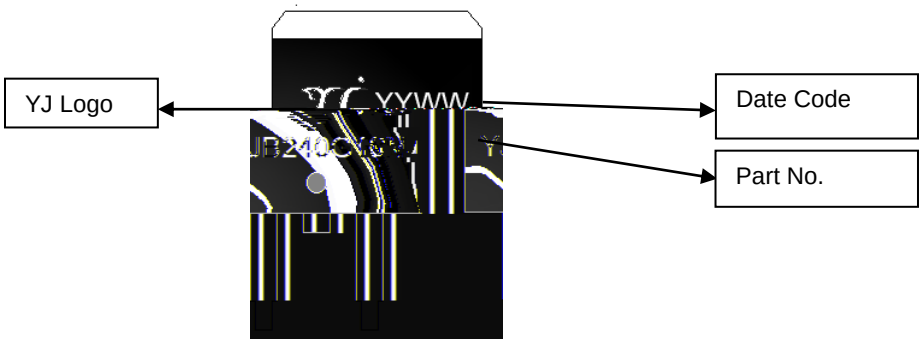
TO-263-B Package information



SYMBOL	DIMENSIONS			
	INCHES		MILLIMETER	
	MIN.	MAX.	MIN.	MAX.
A1	0.000	0.010	0.000	0.254
A2	0.160	0.190	4.064	4.826
b	0.020	0.039	0.508	0.991
b2	0.045	0.070	1.143	1.778
c	0.015	0.029	0.381	0.737
c2	0.045	0.065	1.143	1.651
D	0.380	0.420	9.652	10.668
D1	0.245	---	6.223	---
E	0.575	0.625	14.605	15.875
E1	0.330	0.380	8.382	9.652
E2	0.270	---	6.858	---
e	0.200BSC		5.08BSC	
L	0.070	0.110	1.778	2.794
L1	---	0.066	---	1.676
L2	---	0.070	---	1.778
L3	0.188	0.208	4.780	5.280
	0°	8°	0°	8°

NOTE:
1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

Marking Information



Note
1. All marking is at middle of the product body
2. All marking is in laser printing
3. YJB240G10M is part no., YYWW is date code,
4. Body color: Black

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website http://www.21yangjie.com