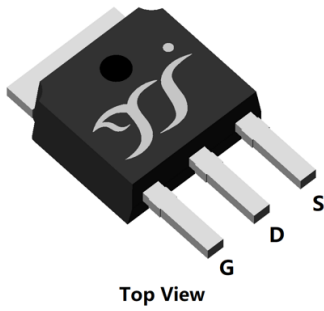
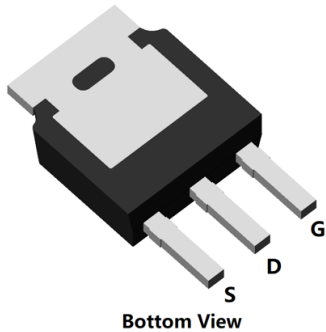


N-Channel Enhancement Mode Field Effect Transistor

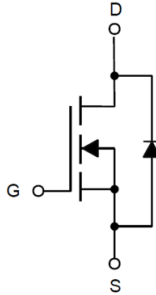


Top View



Bottom View

TO-251



Product Summary

K_{DS}	60V
D	20A
$G_{DS(ON)}$ (at $V_{GS}=10V$)	<43mohm
$G_{DS(ON)}$ (at $V_{GS}=4.5V$)	<47mohm
100% EAS Tested	
100% ∇V_{DS} Tested	

General Description

1 μ CX EdI ZgMV MOSFET technology
 Excellent package for heat dissipation
 High density cell design for low $R_{DS(ON)}$
 Epoxy Meets UL 94 V-0 Flammability Rating
 Halogen Free

Applications

DC-DC Converters
 Power management functions
 Backlighting

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_C=25^\circ C$	20
		$T_C=100^\circ C$	12
Pulsed Drain Current ^A	I_{DM}	60	A
Total Power Dissipation	P_D	$T_C=25^\circ C$	28
		$T_C=100^\circ C$	11
Single Pulse Avalanche Energy ^B	E_{AS}	30.25	mJ
Thermal Resistance Junction-to-Case ^C	R_{JC}	4.4	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJR20N06A	B1	YJR20N06A	75	/	22500	Tube



YJR20N06A

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250 6	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	T _J =25°C		1	6
			T _J =150°C		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 =250 6	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		29	43	m
		V _{GS} =4.5V, I _D =10A		31	47	
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				20	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHZ		1018		pF
Output Capacitance	C _{oss}			70		
Reverse Transfer Capacitance	C _{rss}			62		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =10A		26		nC
Gate-Source Charge	Q _{gs}			5.4		
Gate-Drain Charge	Q _{gd}			6.5		
Reverse Recovery Charge	Q _{rr}	I _r =20A, di/dt=500A/us		11.7		ns
Reverse Recovery Time	t _{rr}			23		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =2A, R _L =1 R _{GEN} =3		10		ns
Turn-on Rise Time	t _r			20		
Turn-off Delay Time	t _{D(off)}			29		
Turn-off fall Time	t _f			22		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. T_J=25°C, V_{DD}=40V, V_G=10V, L=0.5mH, I_{AS}=11A

C. R_{JA} is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{JC} is guaranteed by design, while R_{JA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.



Typical Performance Characteristics

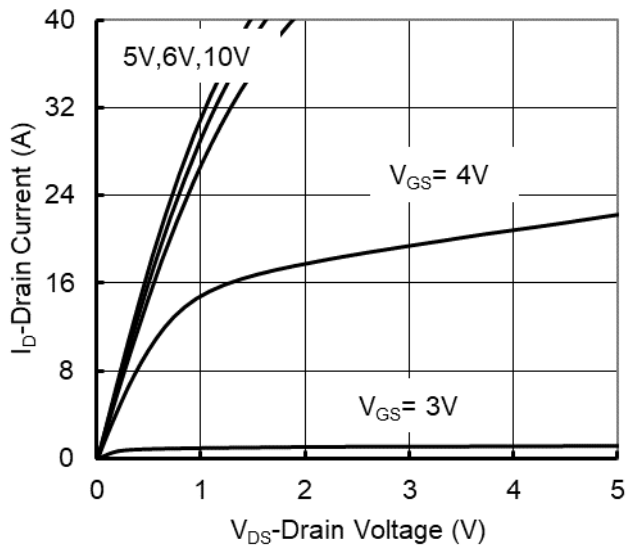


Figure 1. Output Characteristics

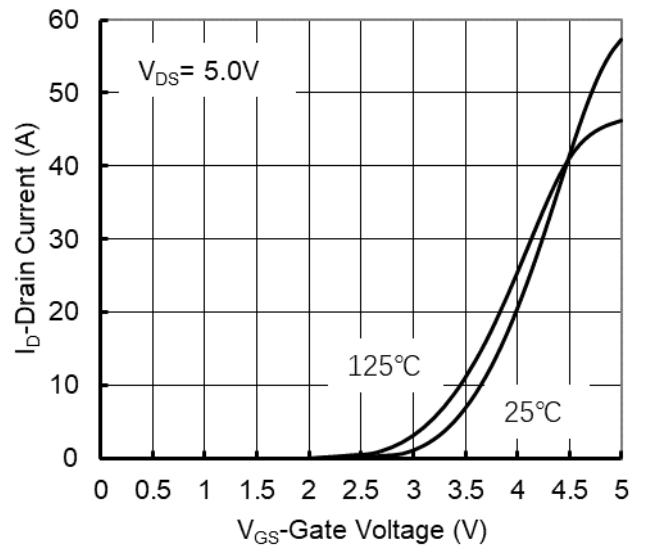


Figure 2. Transfer Characteristics

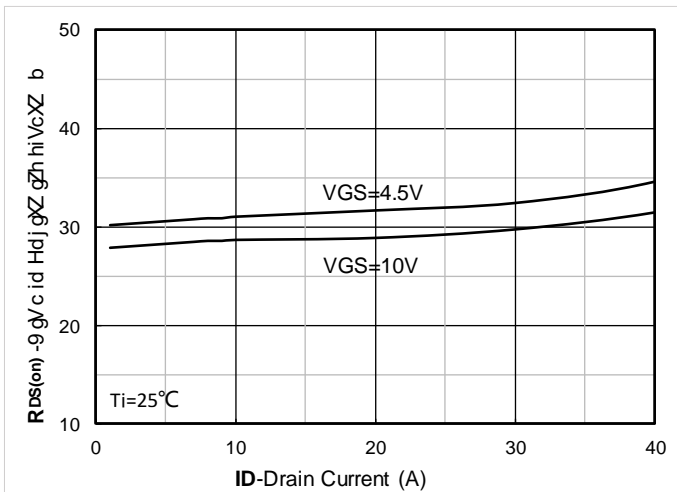


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

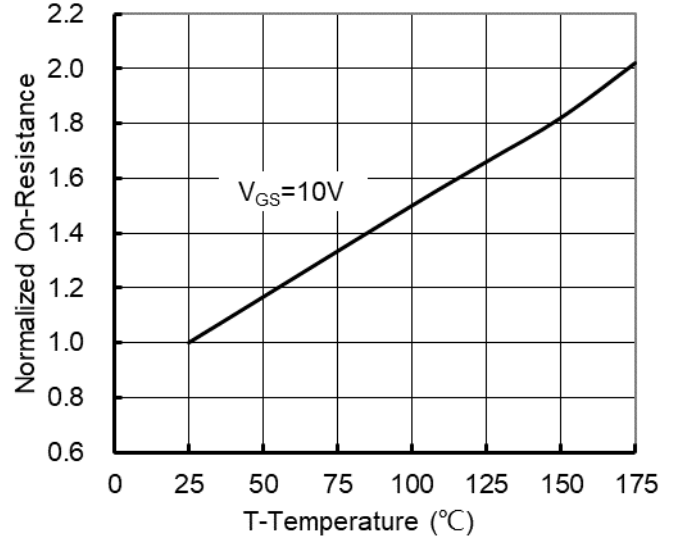


Figure 4. On-Resistance vs. Junction Temperature

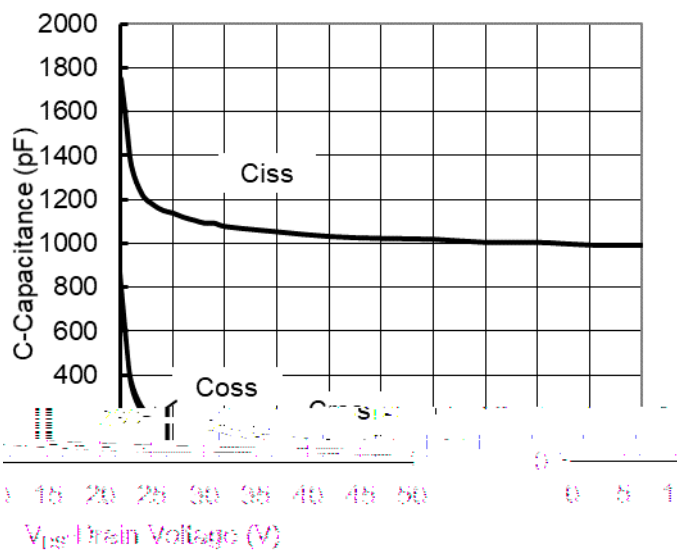


Figure 5. Capacitance Characteristics

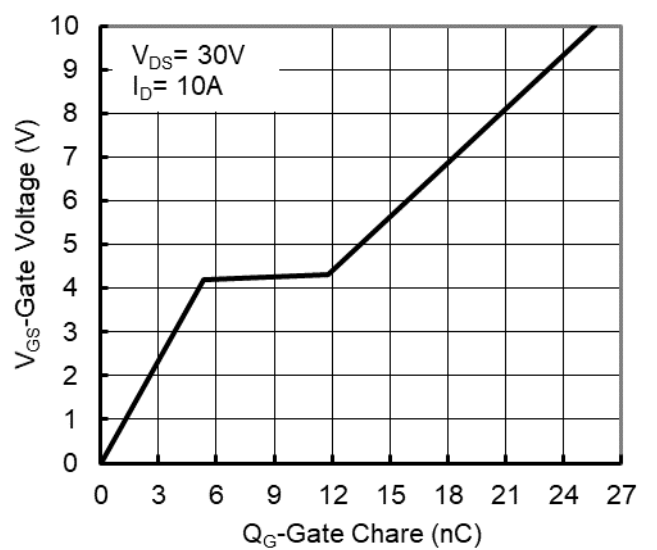


Figure 6. Gate Charge

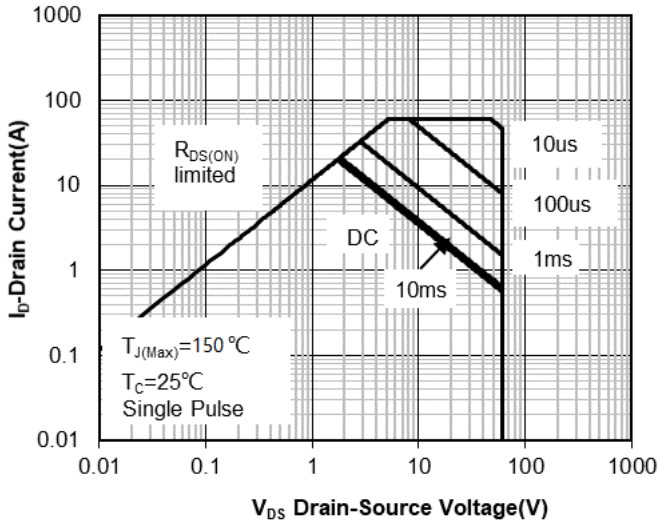


Figure 7. Safe Operation Area

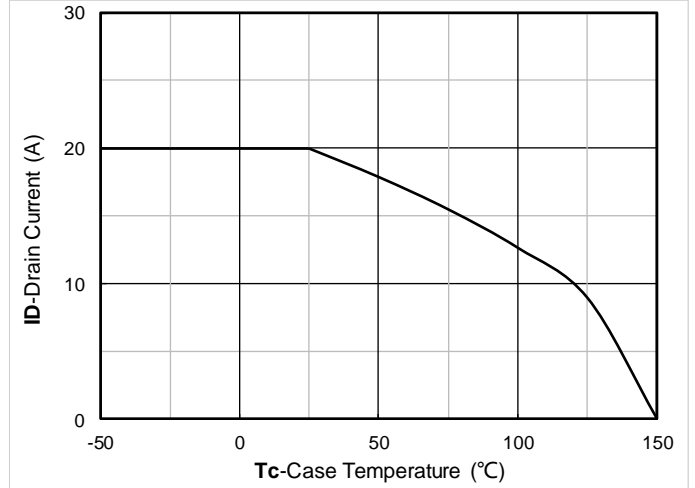


Figure 8. Maximum Continuous Drain Current vs Case Temperature

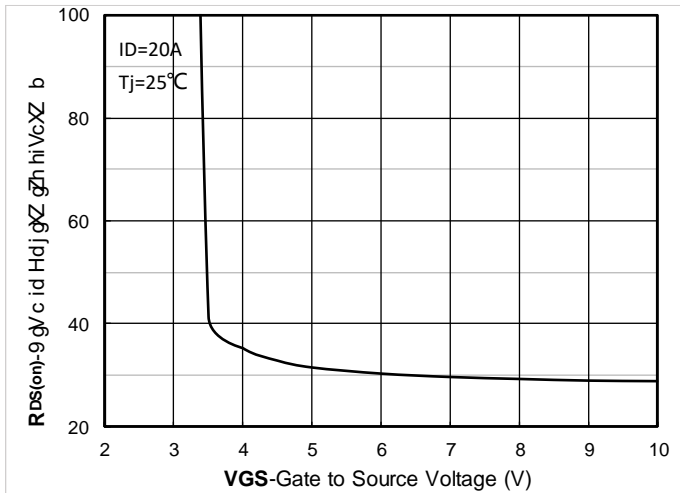


Figure 9. On-Resistance vs Gate to Source Voltage

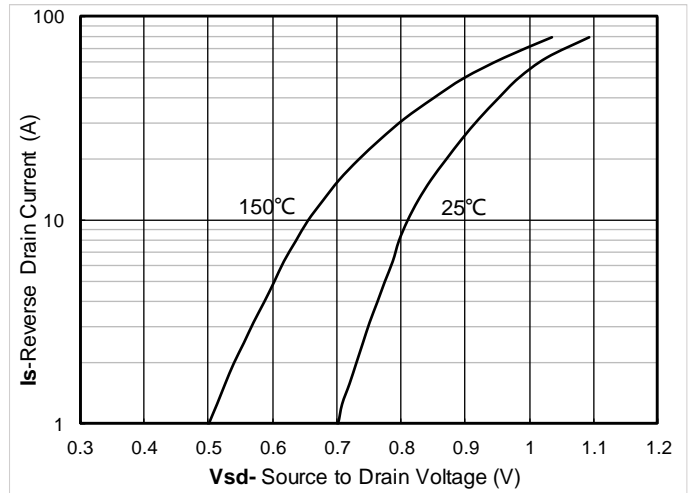


Figure 10. Forward characteristics of reverse diode

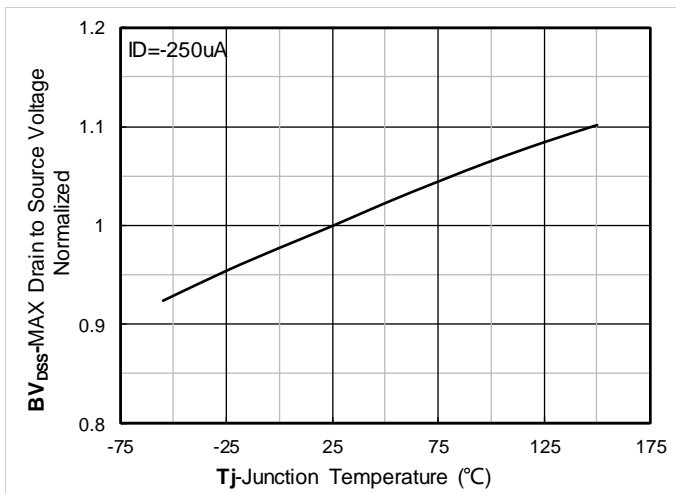


Figure 11. Normalized breakdown voltage

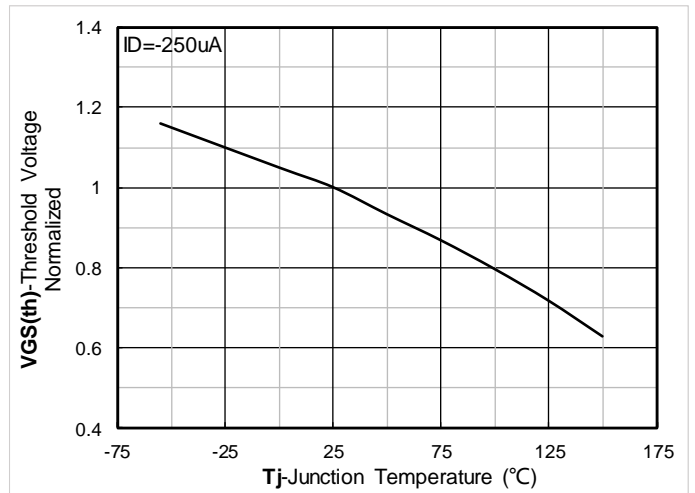


Figure 12. Normalized Threshold voltage



YJR20N06A

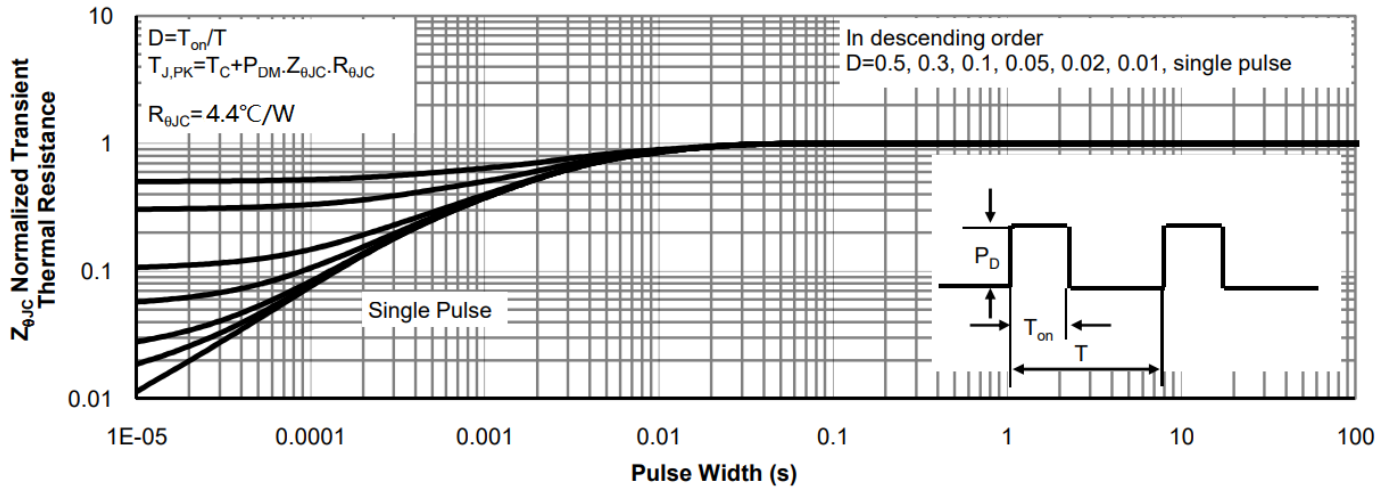
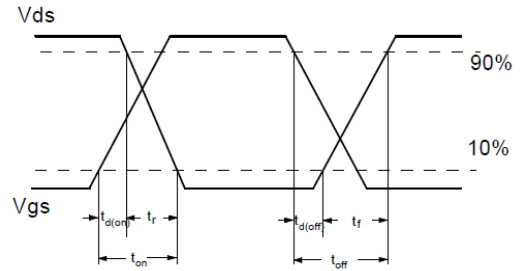
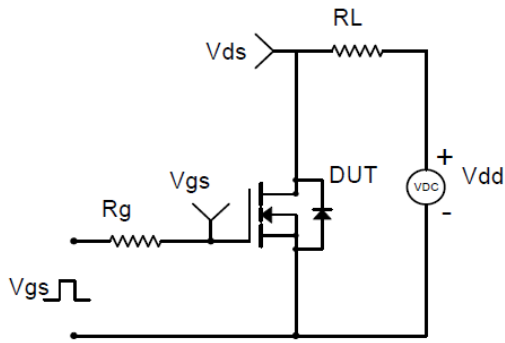
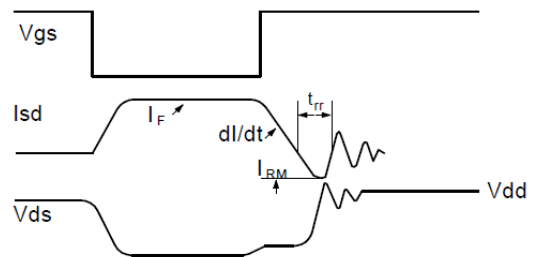
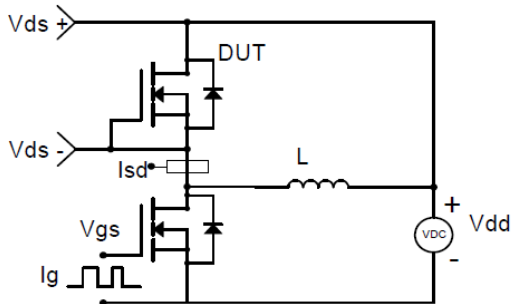


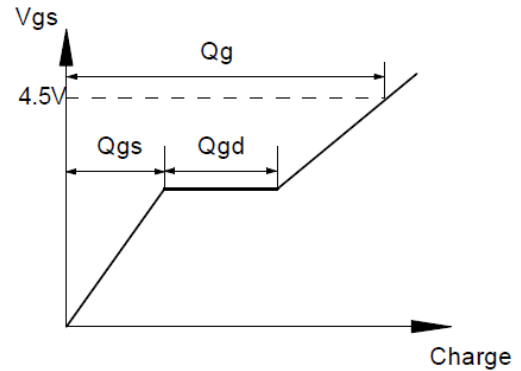
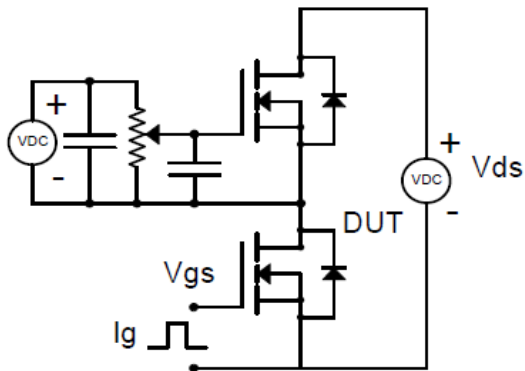
Figure 13. Normalized Maximum Transient Thermal Impedance



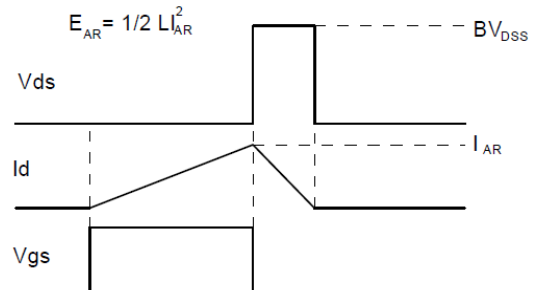
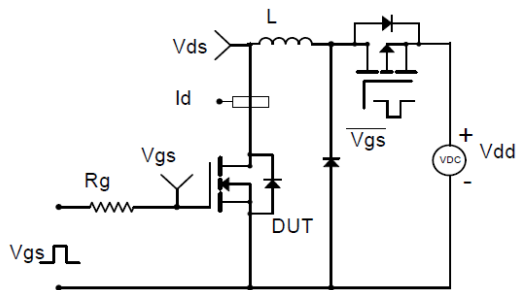
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

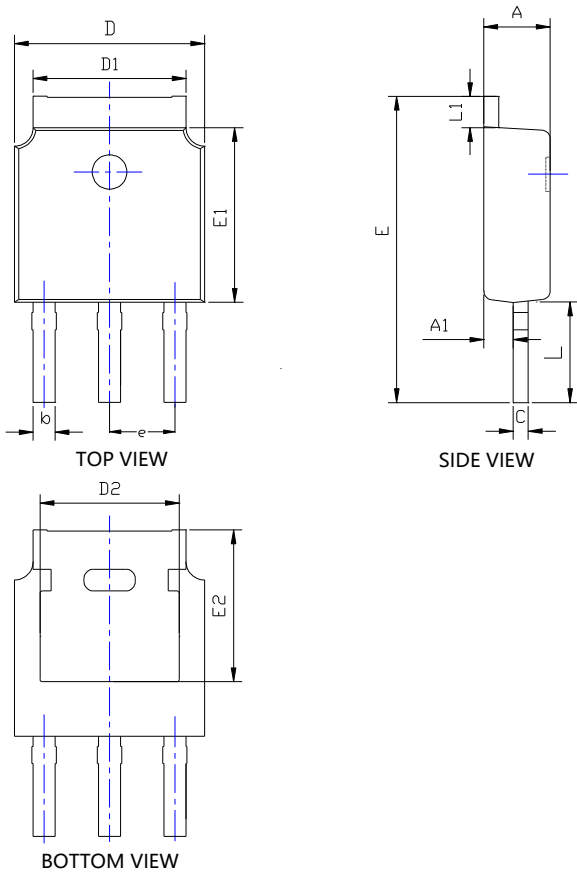


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



YJR20N06A

TO-251 Package Information



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.087	0.094	2.200	2.400
A1	0.035	0.043	0.900	1.100
b	0.026	0.034	0.660	0.860
c	0.018	0.023	0.460	0.580
D	0.256	0.264	6.500	6.700
D1	0.203	0.215	5.150	5.450
D2	0.181	0.195	4.600	4.950
E	0.409	0.453	10.400	11.500
E1	0.236	0.244	6.000	6.200
E2	0.213REF		5.400REF	
e	0.090BSC		2.286BSC	
L	0.138	0.169	3.500	4.300
L1	0.035	0.050	0.900	1.270

NOTE:
1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.



YJR20N06A

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