

- $R_{DS(ON)}$ (at $V_{GS}=2.5V$)
 - $R_{DS(ON)}$ (at $V_{GS}=1.8V$)
 - 100% V_{DS} Tested
 - 100% EAS Tested
- 8mohm

9mohm

14mohm

General Description

- Trench Power MV 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

- High current load applications
- Load switch
- Hard sw ^]

				Unit
Drain-source Voltage		V_{DS}	20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_C=25$	I_D	30	A
	T_C		10	
				W

Single Pulse Avalanche Energy ^B	E_{AS}	64	
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	5	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 +150	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJD30N02A	F1/F2	YJD30N02A	2500	/	25000	13" reel



YJD30N02A

■ 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 =250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V,V _{GS} =0V			1	μA
		V _{DS} =20V,V _{GS} =0V, T _j =150			100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ± 10V, V _{DS} =0V			± 100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.45	0.62	1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =15A		5.6	8	mΩ
		V _{GS} =2.5V, I _D =7A		7.1	9	
		V _{GS} =1.8V, I _D =3A		10	14	
Diode Forward Voltage	V _{SD}	I _S =15A,V _{GS} =0V			1.2	V
Gate resistance	R _G	f=1MHz		1.7		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f=1MHZ		1650		pF
Output Capacitance	C _{oss}			266		
Reverse Transfer Capacitance	C _{rss}			206		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =10V,I _D =30A		46.8		nC
Gate-Source Charge	Q _{gs}			4.6		
Gate-Drain Charge	Q _{gd}			7.3		
Reverse Recovery Chrage	Q _{rr}	I _F =30A, di/dt=100A/us		5.8		ns
Reverse Recovery Time	t _{rr}			19.5		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =10V, I _D =30A R _{GEN} =3Ω		13		
Turn-on Rise Time	t _r			110		
Turn-off Delay Time	t _{D(off)}			40		
Turn-off fall Time	t _f			105		

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

B. T_J=25, V_{DD}=15V, V_G=5V, L=0.5mH, I_{AS}=16A



Typical Performance Characteristics

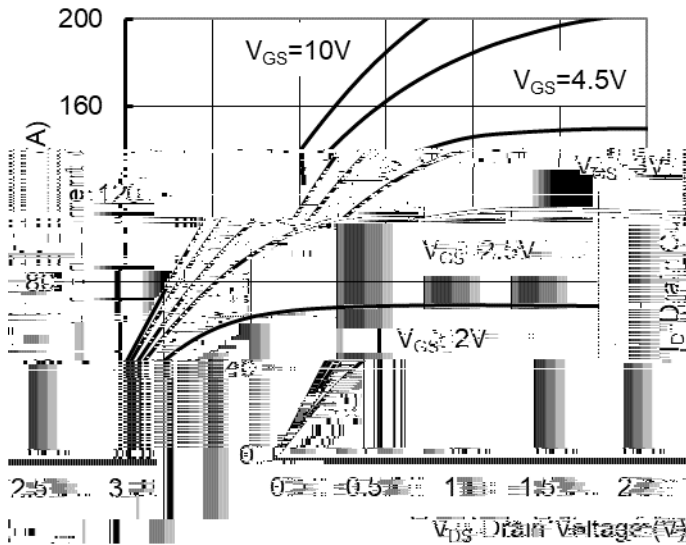


Figure1. Output Characteristics

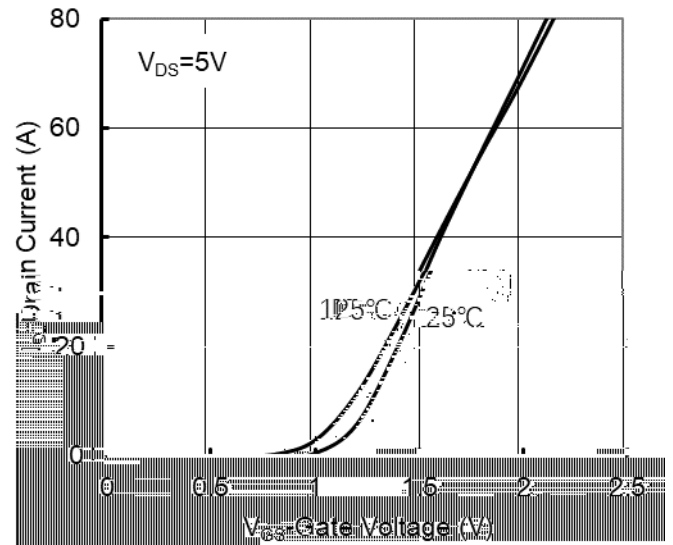


Figure2. Transfer Characteristics

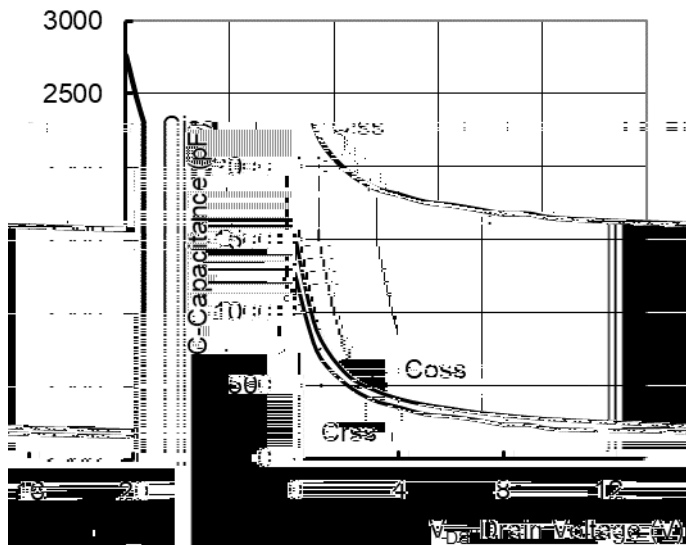


Figure3. Capacitance Characteristics

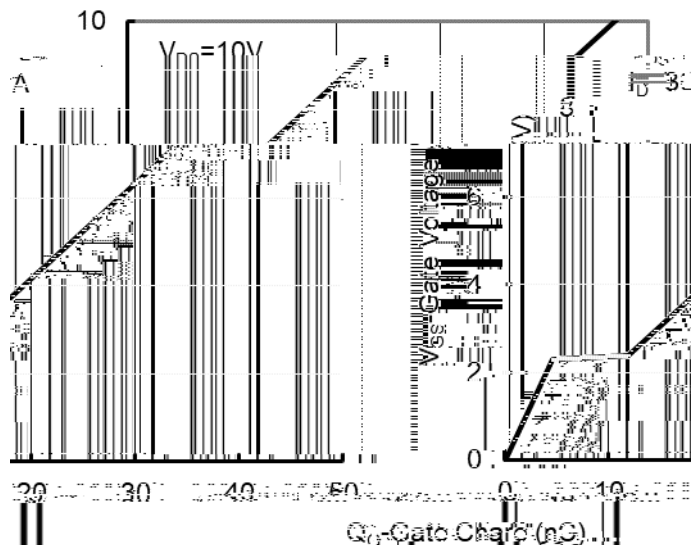


Figure4. Gate Charge

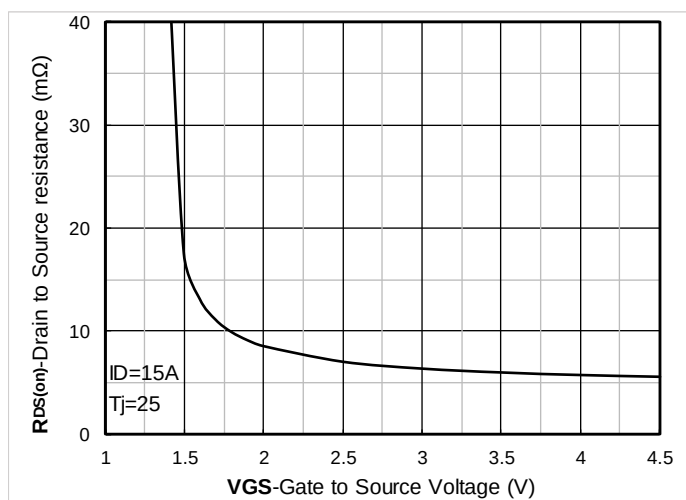


Figure5. On-Resistance vs. Gate to Source Voltage

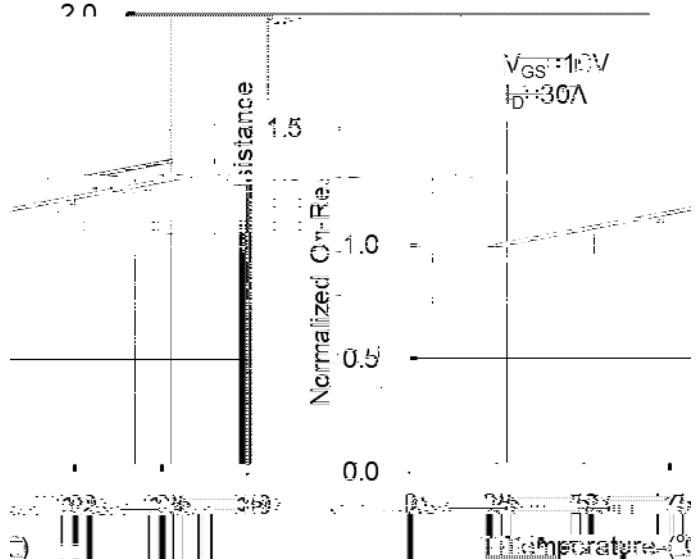


Figure6. On-Resistance vs. Junction Temperature

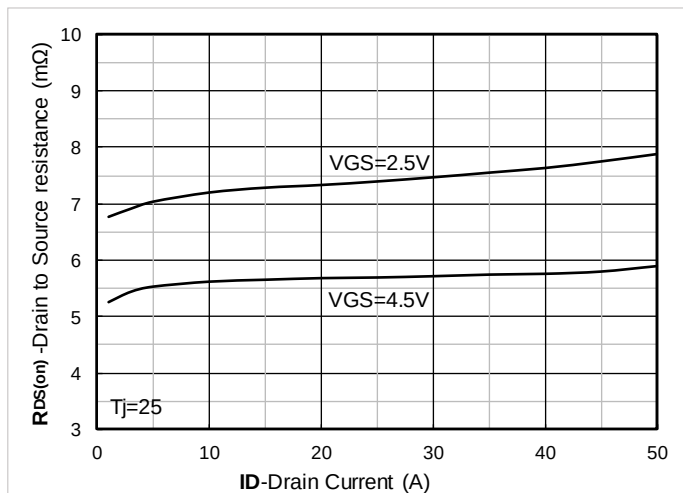


Figure 7. RDS(on) VS Drain Current

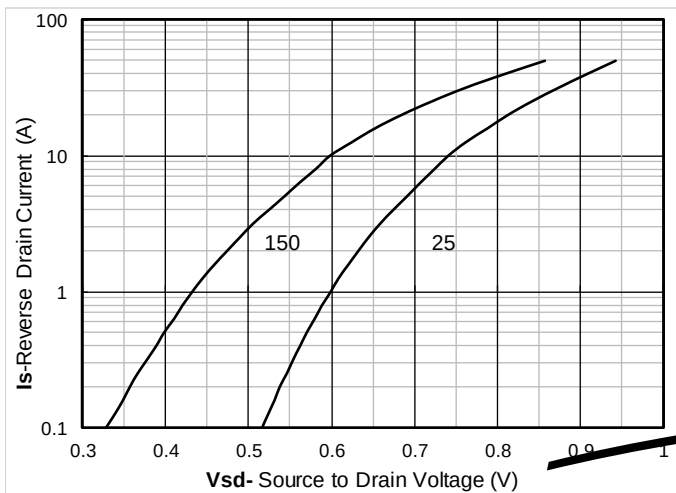


Figure 8. Forward characteristics of reverse diode

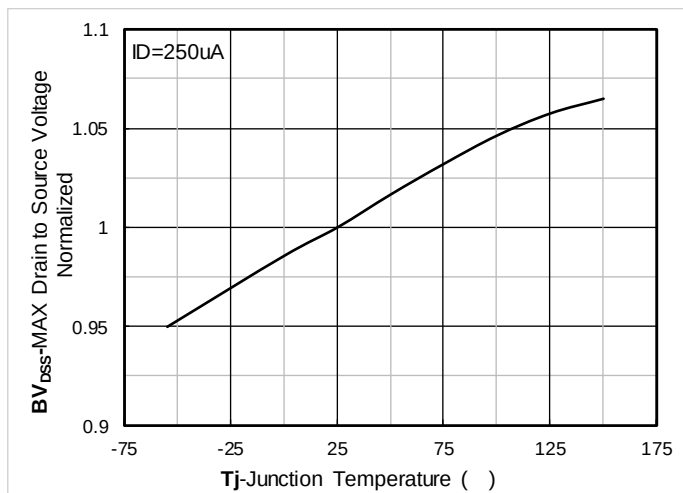


Figure 9. Normalized breakdown voltage

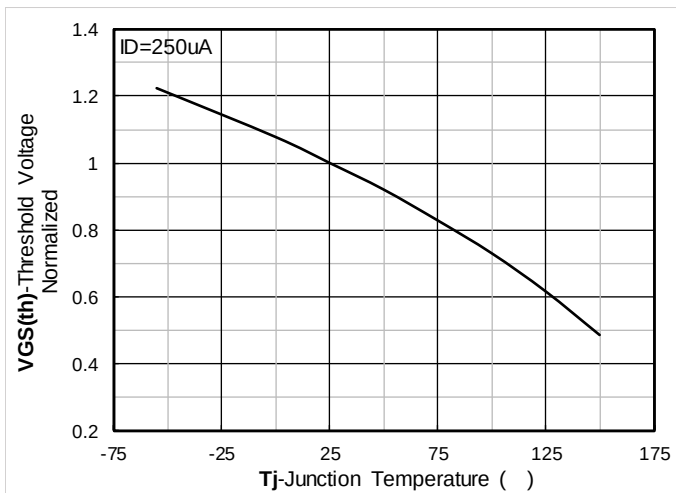
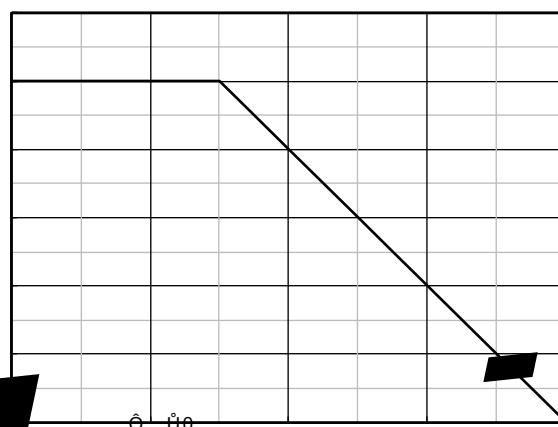
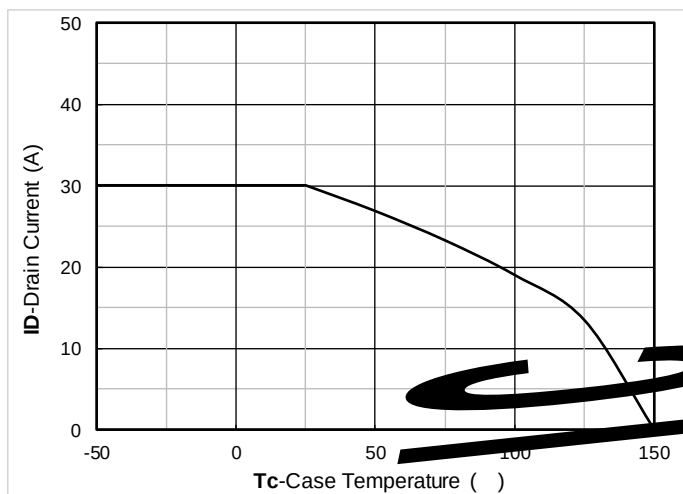


Figure 10. Normalized Threshold voltage



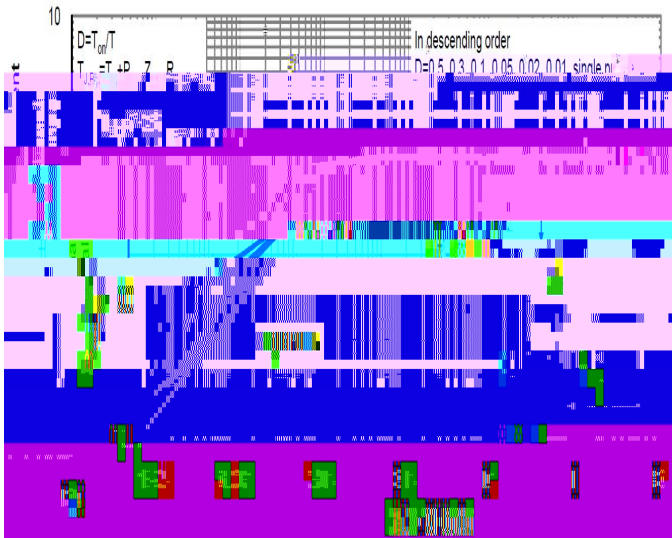


Figure 13. Normalized Maximum Transient Thermal Impedance

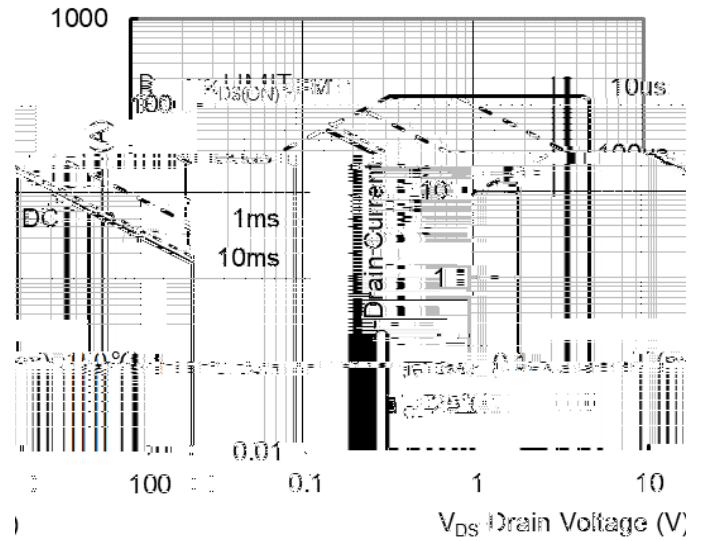
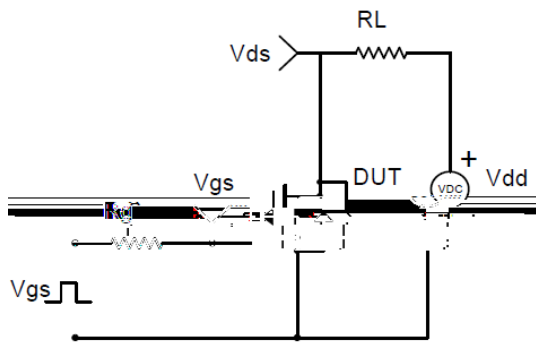
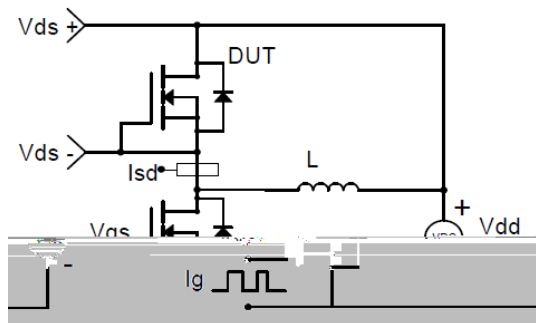


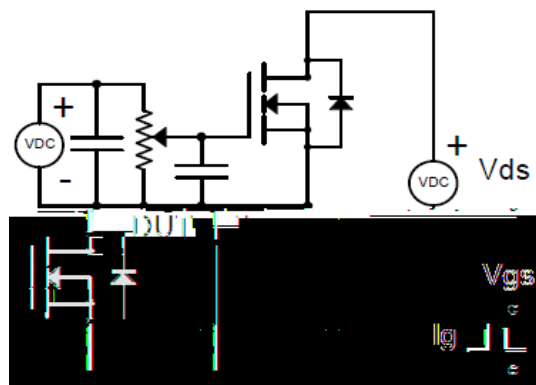
Figure 14. Safe Operation Area



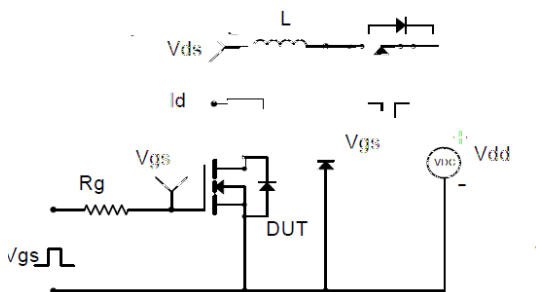
Resistive Switching Test Circuit & Waveforms



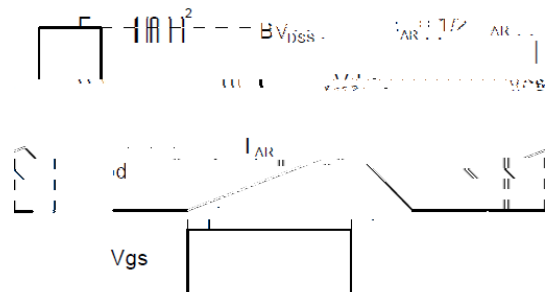
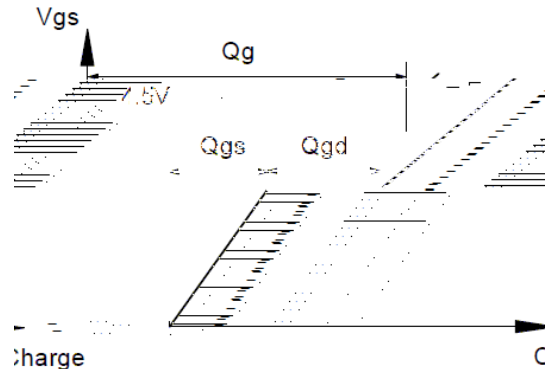
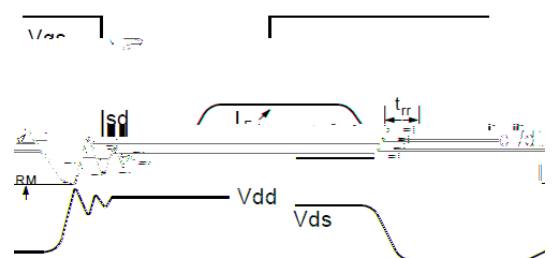
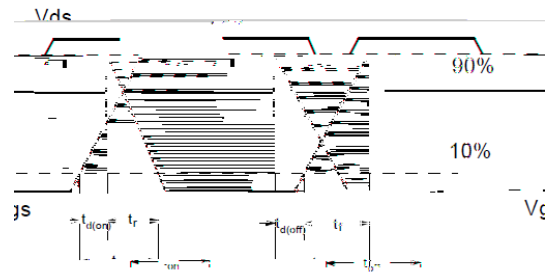
Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform



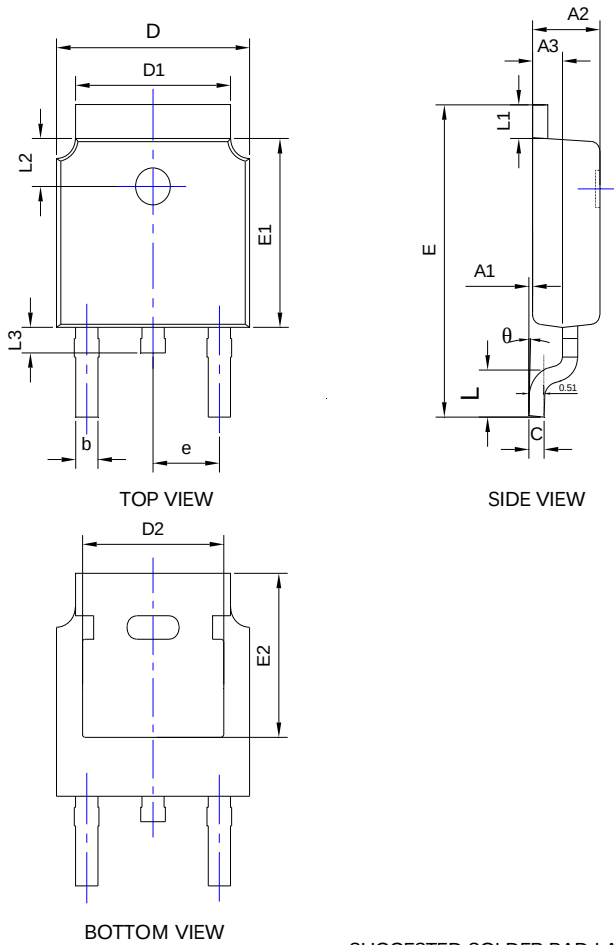
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





YJD30N02A

■ TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000		0.008	0.000		0.200
A2	0.087	0.091	0.094	2.200		2.400
A3	0.035	0.039	0.043	0.900		1.100
b	0.026	0.030	0.034	0.660		0.860
c	0.018	0.020	0.023	0.460		0.580
D	0.256	0.260	0.264	6.500		6.700
D1						
D2	0.181	0.189	0.195	4.600		4.950
E	0.390	0.398	0.406	9.900		10.300
E1	0.236	0.240	0.244	6.000		6.200
E2						
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250		1.750
L1						
L2	0.055		0.075	1.400		1.900
L3	0.024	0.031	0.039	0.600		1.000
L4		0.114REF				
θ	0°		10°	0°		10°

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.

