N Channel Enhancement

- High speed switching
- Very low switching losses
- Fully controllable dv/dt
- High blocking voltage with low on-resistance
- Fast intrinsic diode with low reverse recovery (Qrr)
- Temperature independent turn-off switching losses
- Halogen free, RoHS compliant

- Cooling effort reduction
- Effic]

(Tc = 25°C unless otherwise specified)

$V_{DS,max}$	Drain source voltage	1200	V	V_{GS} = 0V, I_D = 100μA	
$V_{GS,max}$	Gate source voltage	-8 /+22	V	Absolute maximum values	Note1
$V_{GSpulse}$	Gate-source voltage,max. transient voltage	-10 /+25	V	$t_p \leq 0.5\mu s$, D 0.01	
V_{GSop}	Gate source voltage	-4 /+18	V	Recommended operational values	
I_D	Continuous drain current	23	A	V_{GS} = 18V, T_C = 25˚C	Fig.19
		16		V_{GS} = 18V, T_C = 100˚C	
I_D(pulse)	Pulsed drain current	63	A	Pulse width t_P =100μs limited by $T_{J,max}$	Fig.22
P_D	Power dissipation	109	W	T_C = 25˚C,T_J = 175˚C	Fig.20
T_J ,T_{stg}	Operating Junction and storage temperature	-55 to +175	˚C		
T_L	Soldering temperature	260	˚C	1.6mm (0.063”) from case for 10s	
T_M	Mounting torque	1 8.8	Nm lbf-in	M3 or 6-32 screw	

Note 1 when using MOSFET Body Diode $V_{GS,max}$ = -4 / +22V

$R_{th(j-c)}$	Thermal resistance from junction to case	-	1.1	1.38	°C/W	-	Fig.21

(Tc = 25°C unless otherwise specified)

$V_{(BR)DSS}$	Drain-source breakdown voltage	1200	-	-	V	V_{GS} = 0V, I_D = 100μA	
$V_{GS(th)}$	Gate threshold voltage	2.3	2.8	3.6	V	V_{DS} = V_{GS}, I_D = 2.5mA	Fig.11
		-	2.1	-	V	V_{DS} = V_{GS}, I_D = 2.5mA T_J = 175°C	
I_{DSS}	Zero gate voltage drain current	-	1	10	μA	V_{DS} = 1200V, V_{GS} = 0V	
I_{GSS}	Gate source leakage current	-	-	100	nA	V_{GS} = 18V, V_{DS} = 0V	
$R_{DS(on)}$	Current drain-source on-state resistance	-	137	200	mΩ	V_{GS} = 15V, I_D = 9A	Fig.4,5,6
		-	215	-		V_{GS} = 15V, I_D = 9A, T_J = 175°C	
		-	115	160		V_{GS} = 18V, I_D = 9A	
		-	204	-		V_{GS} = 18V, I_D = 9A, T_J = 175°C	
g_{fs}	Transconductance	-	6.8	-	S	V_{DS} = 20V, I_D = 9A	Fig.7
		-	6	-		V_{DS} = 20V, I_D = 9A, T_J = 175°C	
$R_{g,int}$	Internal gate resistance	-	7	-	Ω	V_{AC} = 25mV, f = 1MHz, open drain	

(Tc = 25°C unless otherwise specified)

C_{iss}	Input capacitance	-	545	-	pF	V_{DS} = 1000V, V_{GS} = 0V T_J = 25°C, V_{AC} = 25mV f = 100kHz	Fig.17, 18
C_{oss}	Output capacitance	-	37	-			
C_{rss}	Reverse capacitance	-	3.4	-			
E_{oss}	Coss stored energy	-	20	-	μJ		Fig.16

Q_{gs}	Gate source charge	-	5.5	-	nC	V_{DS} = 800V, V_{GS} = -4/+18V I_D = 9A	Fig.12
Q_{gd}	Gate drain charge	-	5.3	-			
Q_g	Gate charge	-	16.6	-			

Datasheet s t a

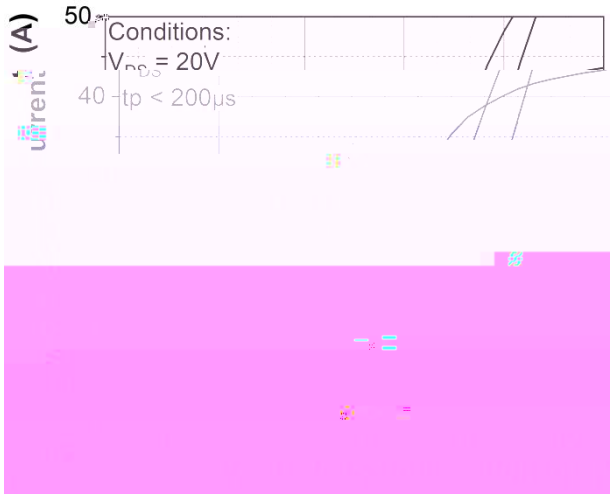


Figure 7. Transfer characteristic for various junction temperatures

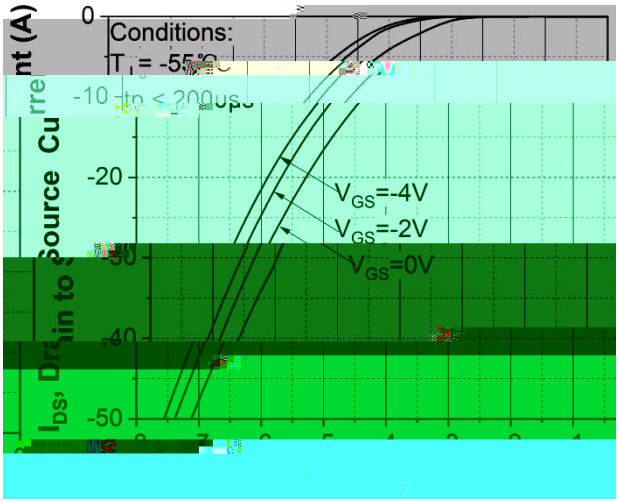


Figure 8. Body diode characteristic at T_J = -55 ºC

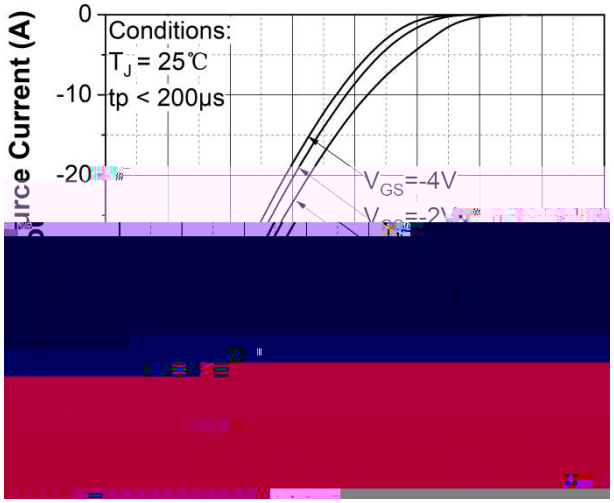


Figure 9. Body diode characteristic at T_J = 25 ºC

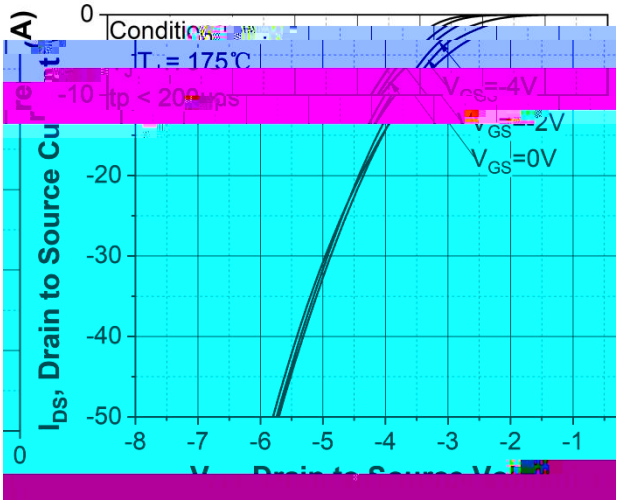


Figure 10. Body diode characteristic at T_J = 175ºC

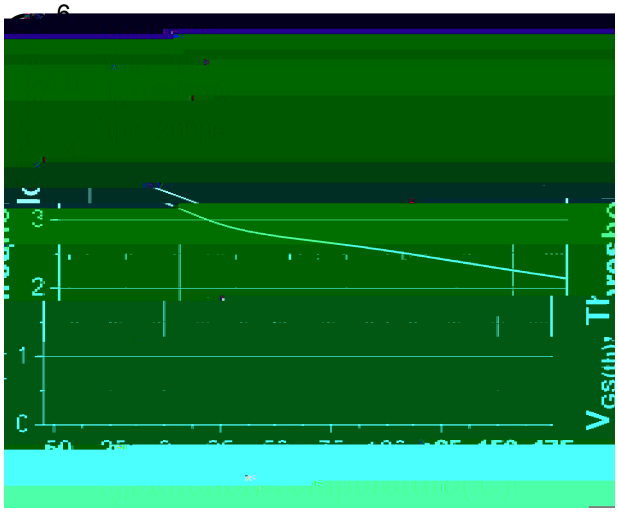


Figure 11. Threshold voltage vs. temperature

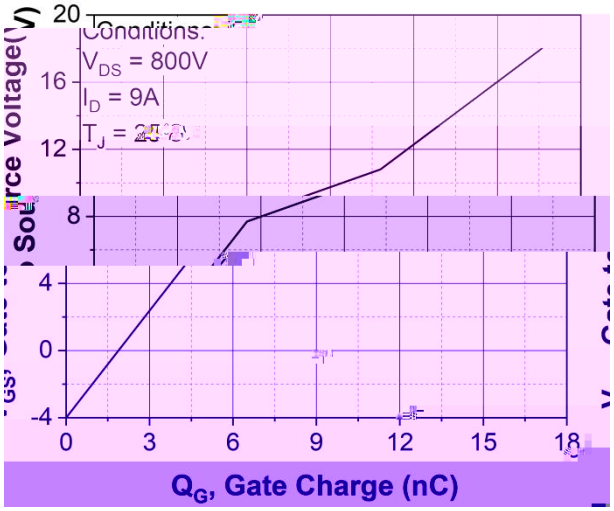


Figure 12. Gate charge characteristic

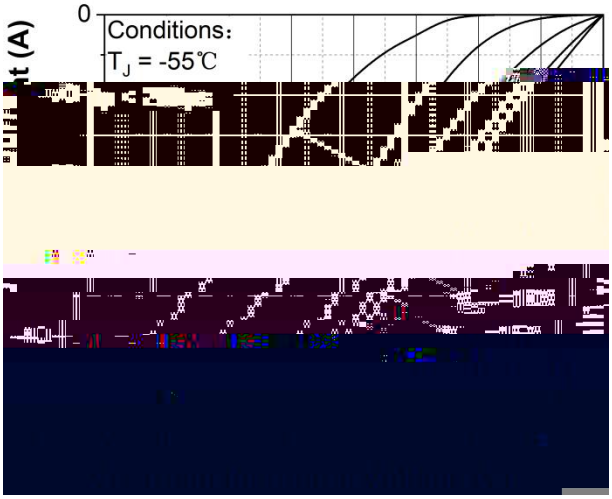


Figure 13. 3rd quadrant characteristic at T_J = -55 ºC

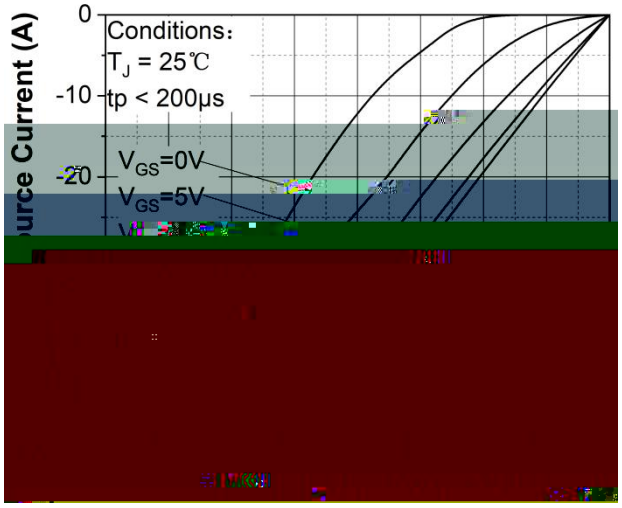


Figure 14. 3rd quadrant characteristic at T_J = 25 ºC

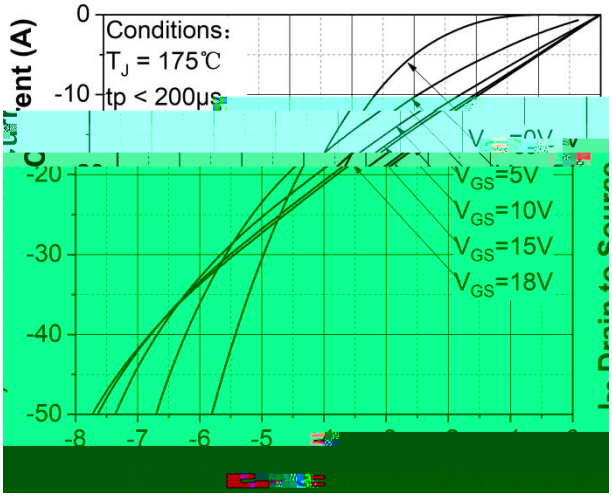


Figure 15. 3rd quadrant characteristic at T_J = 175 ºC

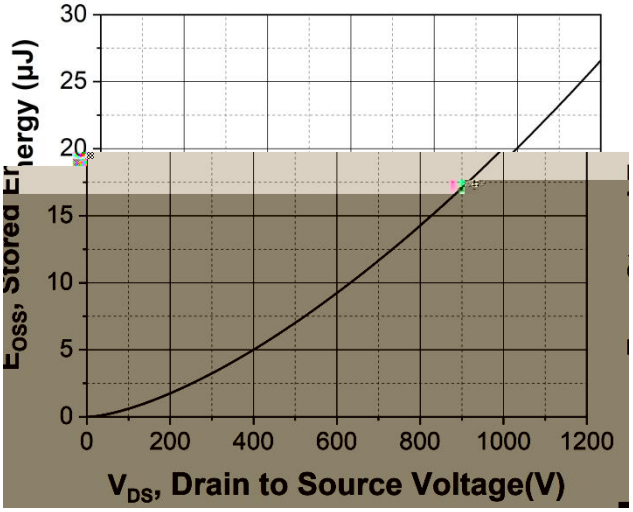


Figure 16. Output capacitor stored energy

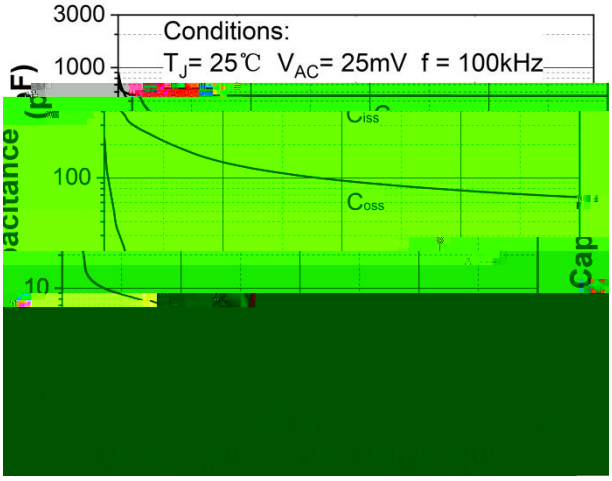


Figure 17. Capacitances vs. drain-source voltage (0 - 200V)

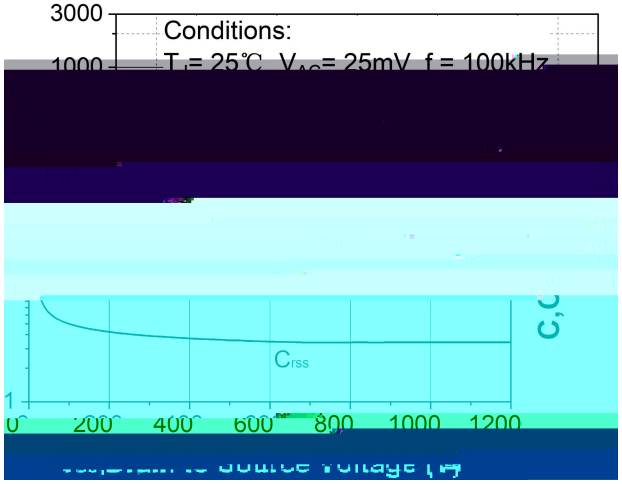


Figure 18. Capacitances vs. drain-source voltage (0 - 1200V)

Figure 19. Continuous drain current derating vs. case temperature

Figure 20. Maximum power dissipation derating vs. case temperature

Figure 23. Clamped Inductive switching energy vs. drain current (V_{DD} = 600V)

Figure 24. Clamped Inductive switching energy vs. drain current (V_{DD} =

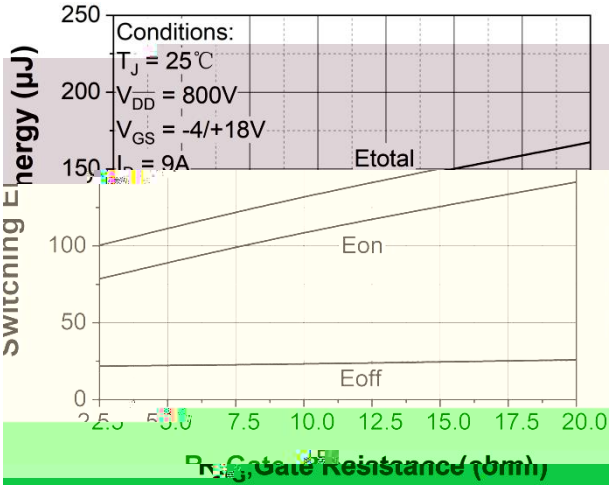


Figure 25. Clamped inductive switching energy vs. R_G (ext)

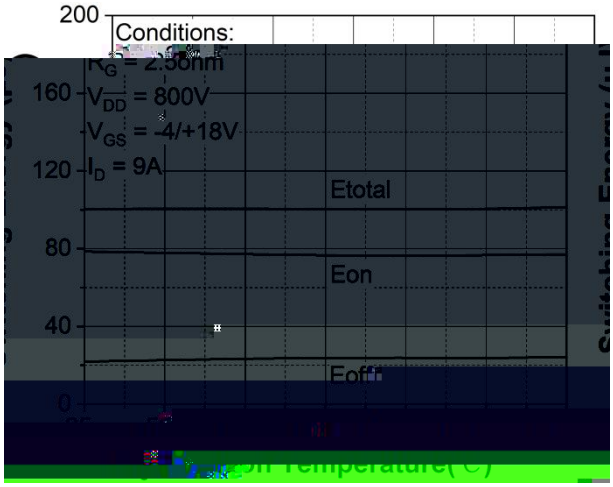


Figure 26. Clamped inductive switching energy vs. temperature

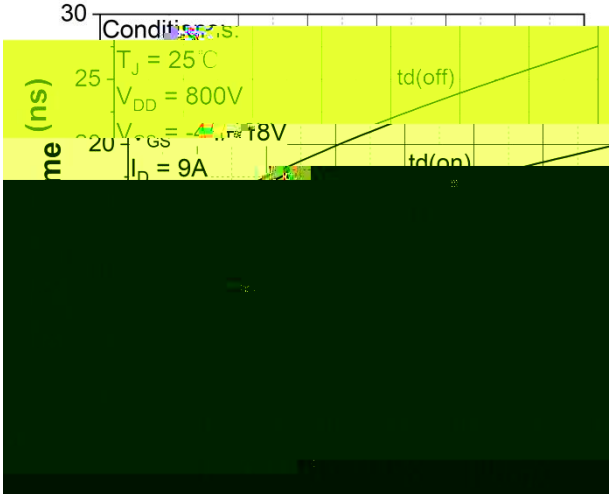
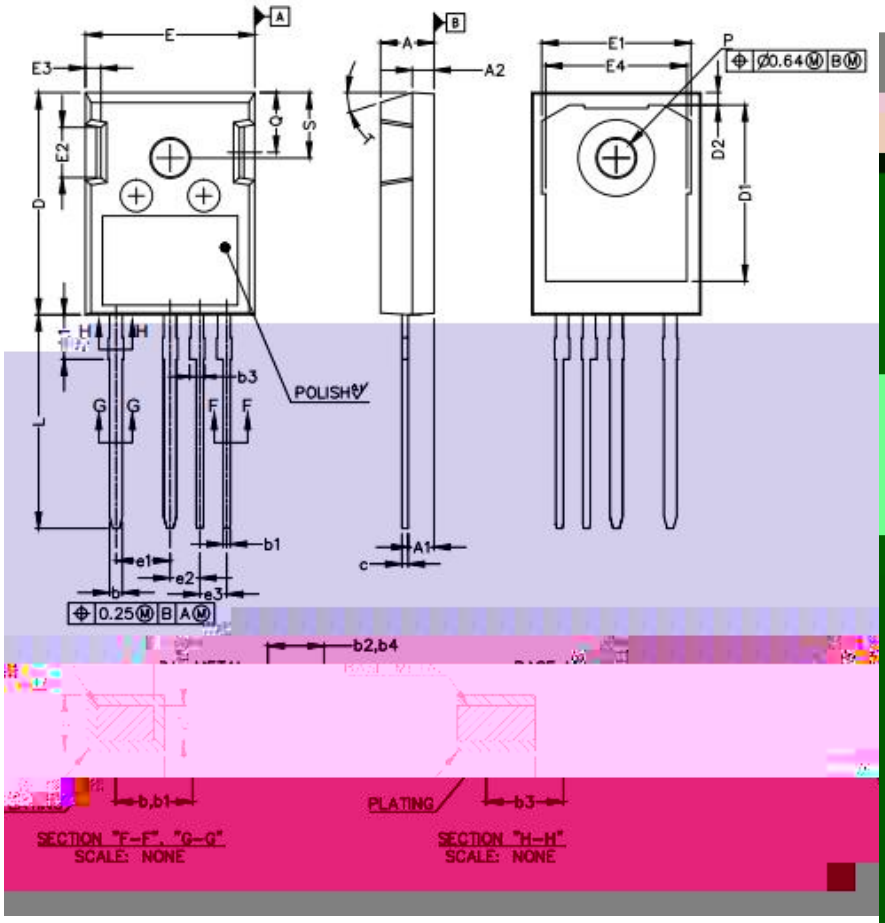
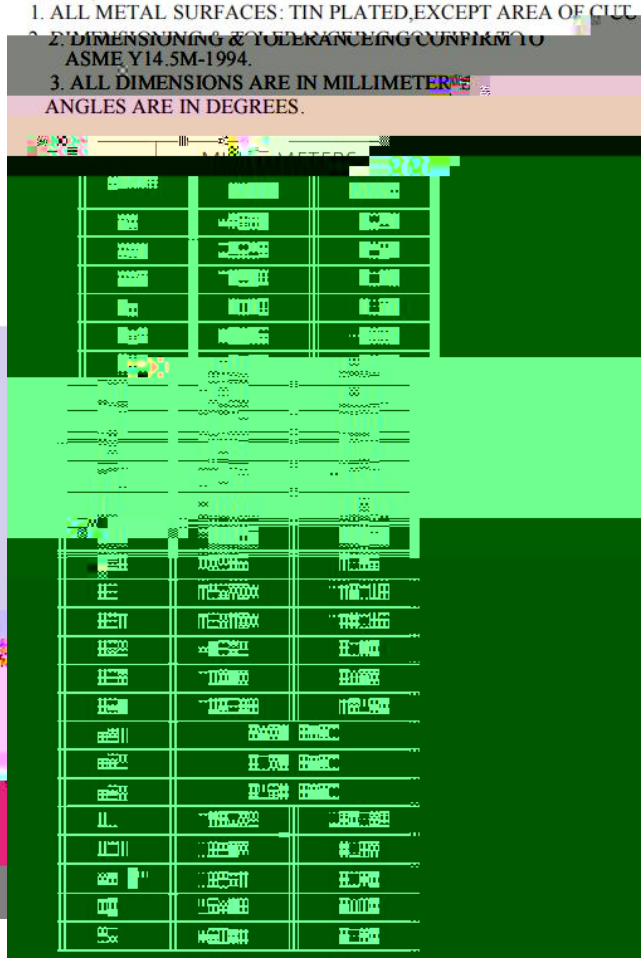


Figure 27. Switching times vs. R_G (ext)

(TO-247-4L-C)



NOTE ;
1. ALL METAL SURFACES: TIN PLATED,EXCEPT AREA OF CUT.
2. DIMENSIONING & TOLERANCEING CONFIRM TO ASME Y14.5M-1994.
3. ALL DIMENSIONS ARE IN MILLIMETERS.
ANGLES ARE IN DEGREES.



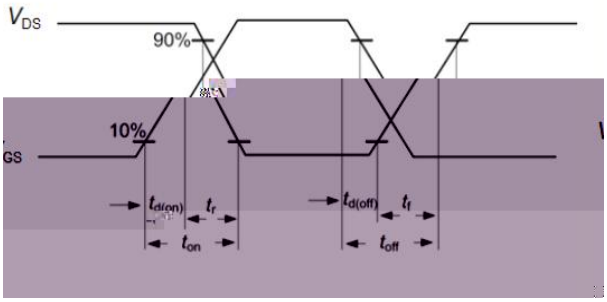


Figure A. Definition of switching times

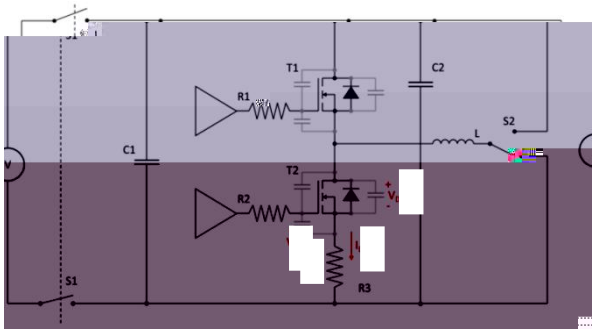


Figure B. Dynamic test circuit

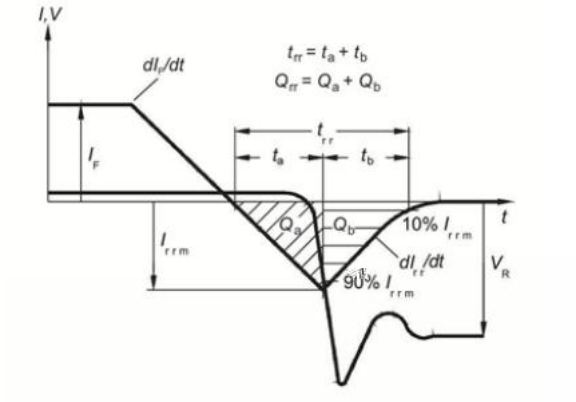


Figure C. Definition of body diode switching characteristics

7. Except as otherwise explicitly approved by Sichain in a written document signed by authorized representatives of Sichain, Sichain' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

8. For use of our products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a Sichain representatives, for example but not limited to: transportation equipment,primary communication equipment,traffic