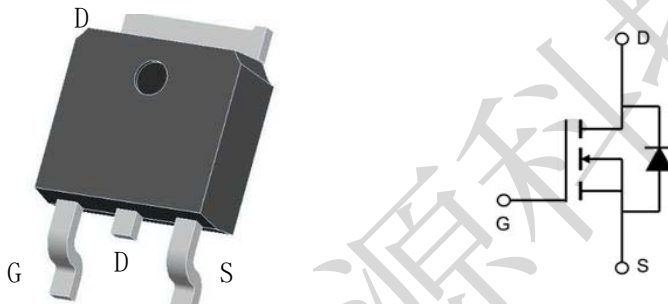


N-Channel Enhancement-Mode MOSFET (30V,80A)

PRODUCT SUMMARY

V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
30V	80A	3.8@ $V_{GS} = 10V$, $I_D=40A$
		5.5@ $V_{GS} = 4.5V$, $I_D=20A$

Features	Applications
- Super high density cell design for extremely low $R_{DS(ON)}$ - Exceptional on-resistance and maximum DC current capability - Excellent $Q_g \times R_{DS(ON)}$ product (FOM) - Lead (Pb) -free and halogen-free	- Motor control and drive - Power Tool Application - Uninterruptible Power System - Battery Management

TO-252-2L	TOP Marking
	 3 2 0 6 D XXXXXX XXXXXX:D/C

Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous)@T _A =25°C	80	A
	Drain Current (Continuous)@T _A =75°C	60	A
I_{DM}	Drain Current (Pulsed) ^a	320	A
P_D	Total Power Dissipation @T _c =25°C	110	W
	Total Power Dissipation @T _c =75°C	85	W
EAS	Avalanche energy, single pulsed	300	mJ
I_S	Maximum Diode Forward Current	45	A
T _j , T _{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R _{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	55	°C/W

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

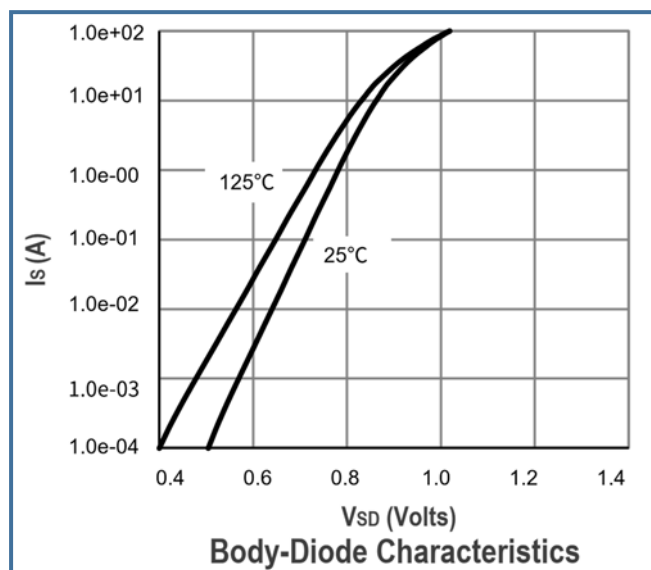
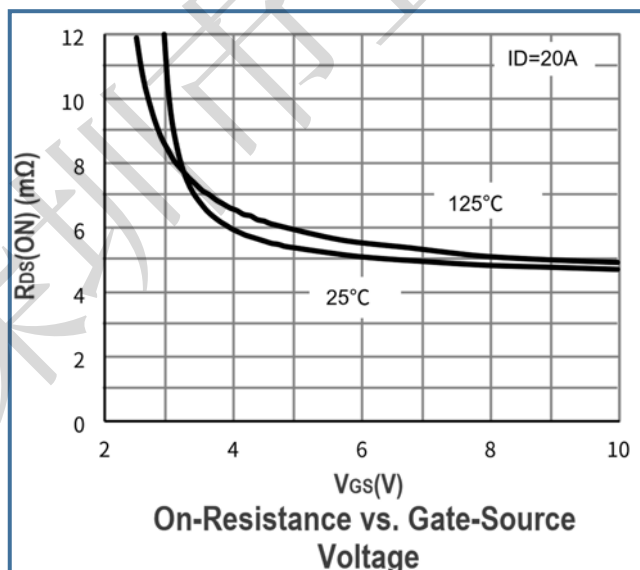
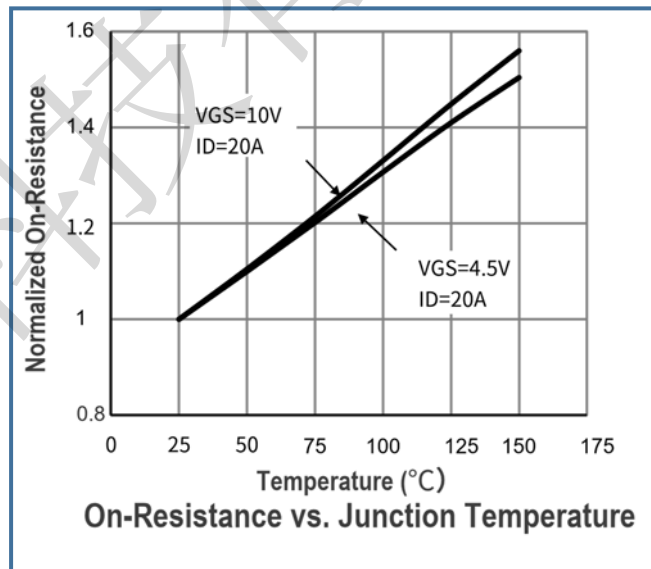
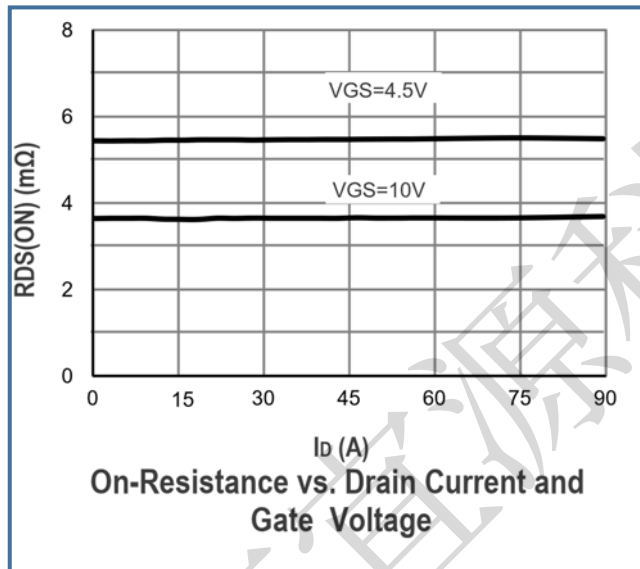
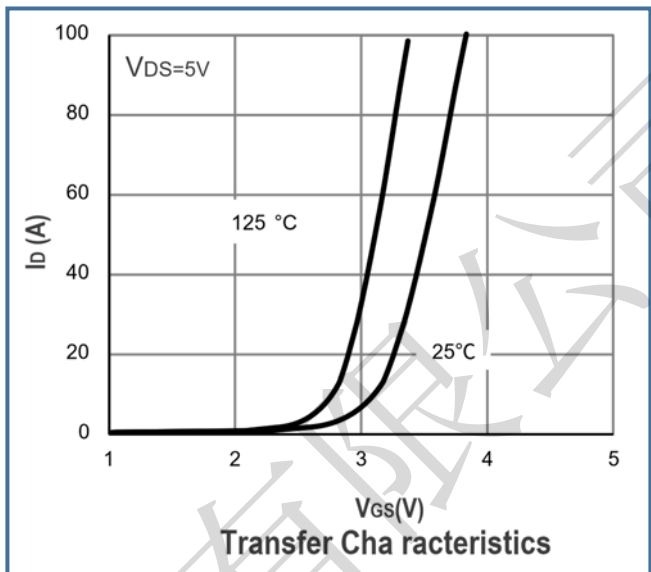
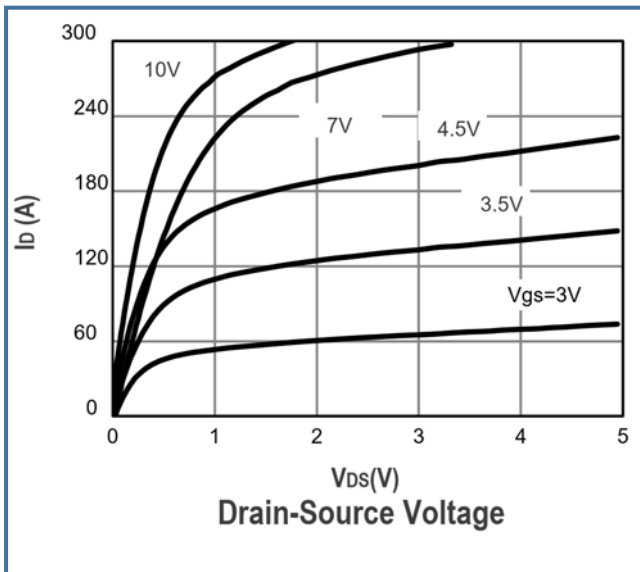
b: 1-in² 2oz Cu PCB board

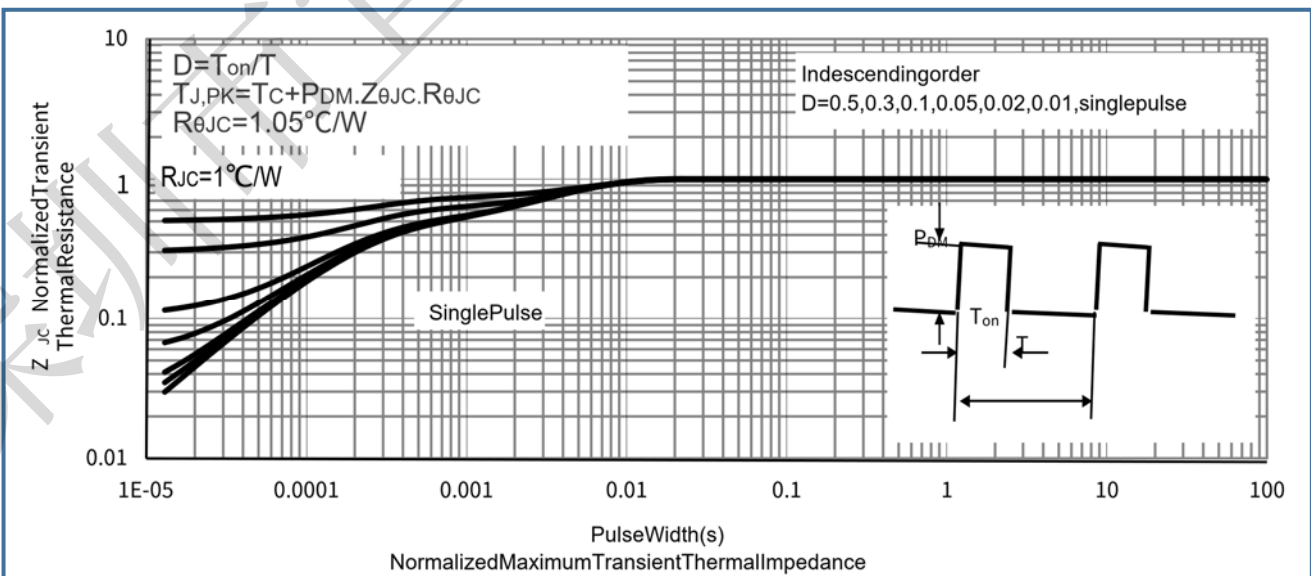
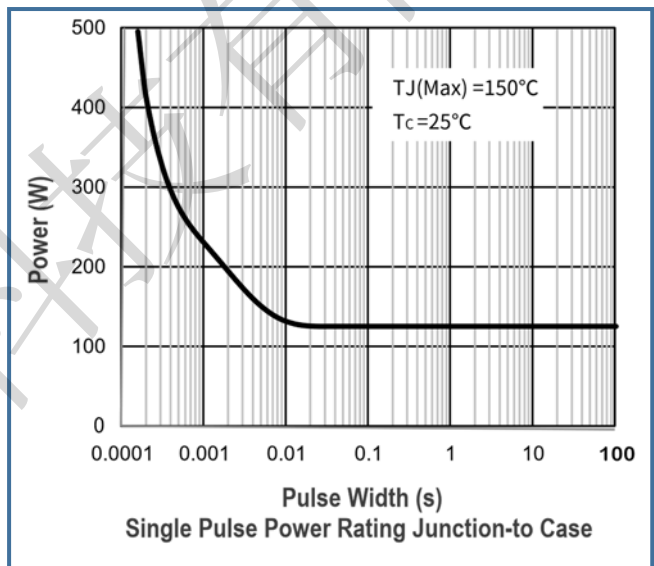
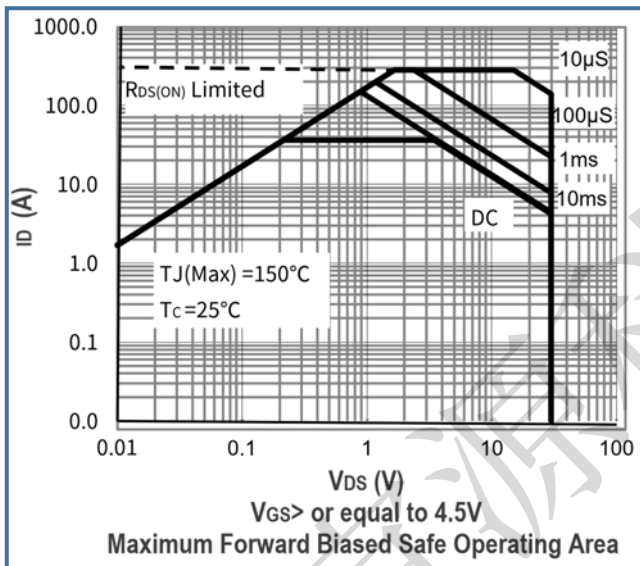
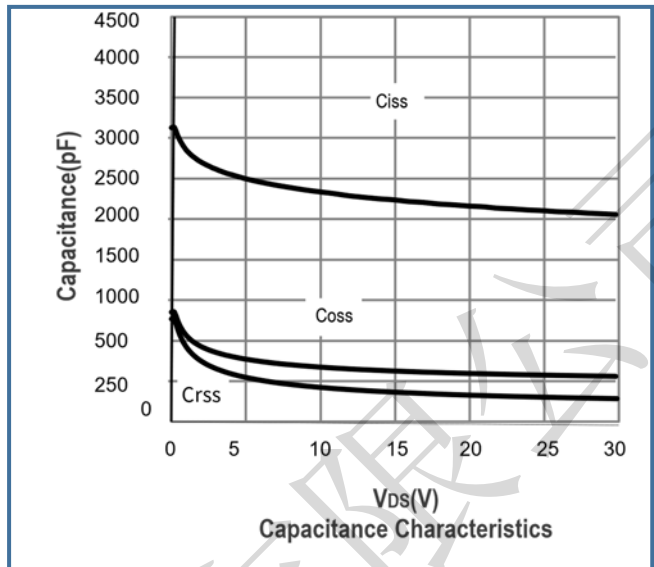
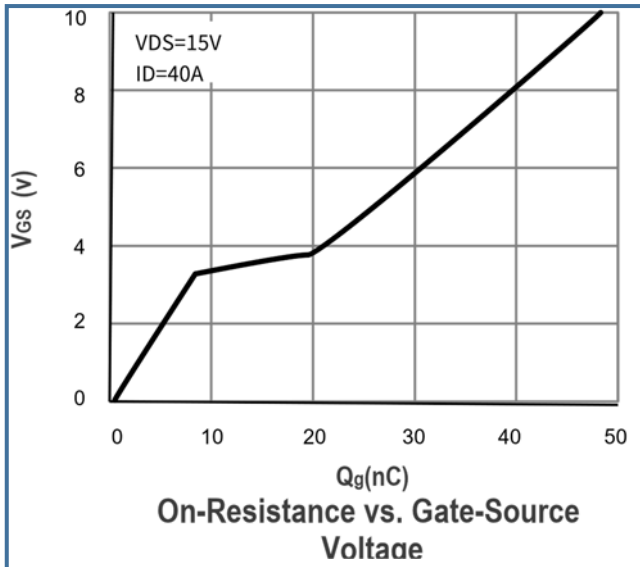
Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	1.3	1.8	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =40A	-	3.8	5.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	5.5	7.5	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =40A		90		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	2165	-	PF
C _{oss}	Output Capacitance		-	268	-	
C _{rss}	Reverse Transfer Capacitance		-	212	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =40A, V _{GS} =10V	-	52	-	nC
Q _{gs}	Gate-Source Charge		-	9	-	
Q _{gd}	Gate-Drain Charge		-	11	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _D =40A, V _{GEN} =10V, R _G =3Ω	-	7.5	-	nS
t _r	Turn-on Rise Time		-	80	-	
t _{d(off)}	Turn-off Delay Time		-	45	-	
t _f	Turn-off Fall Time		-	92	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	-	1.2	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.5	-	Ω

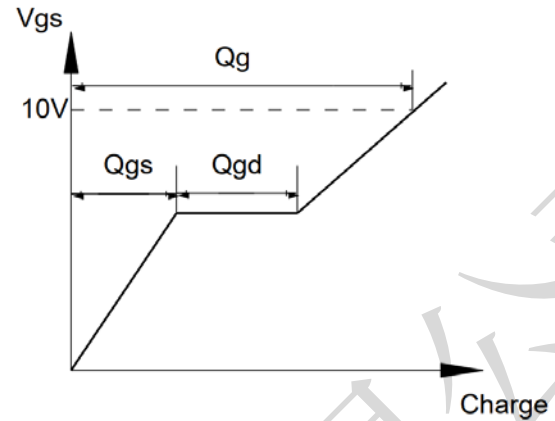
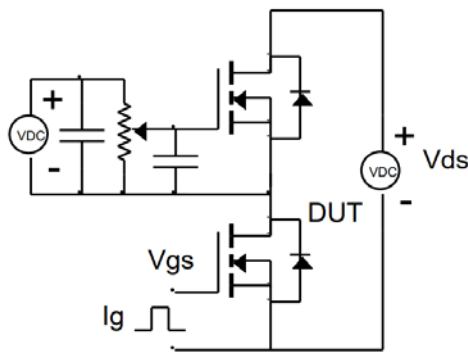
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

Typical Characteristics Curves (Ta=25°C, unless otherwise note)

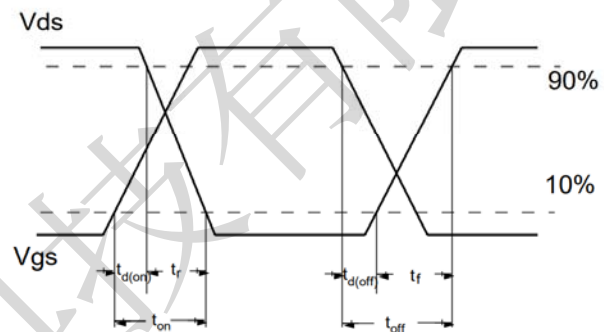
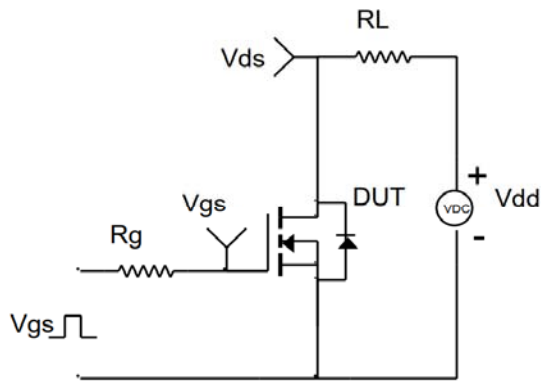




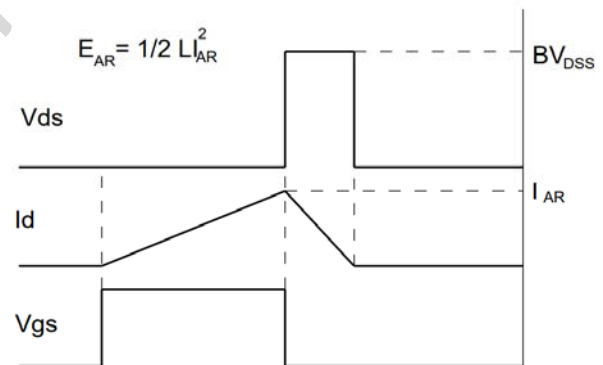
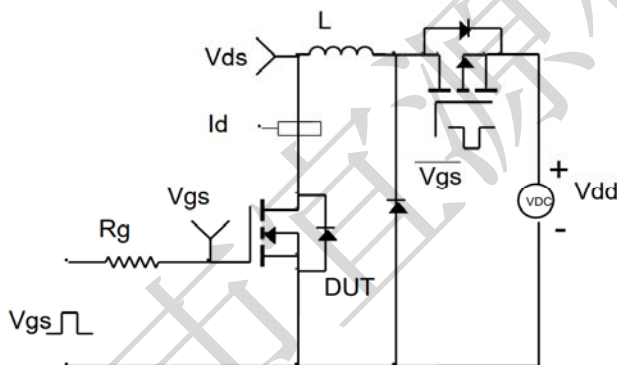
Gate Charge Test Circuit & Waveforms



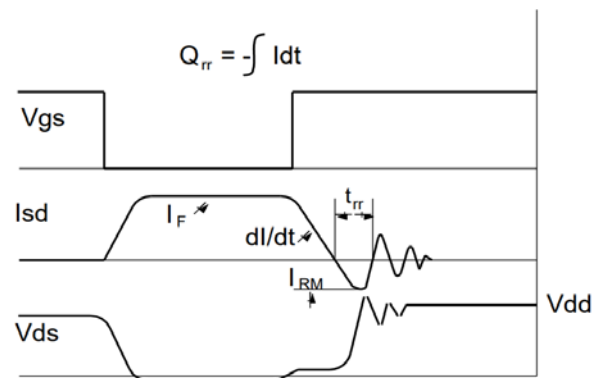
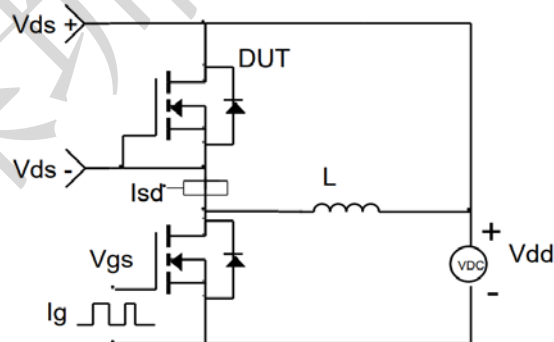
Resistive Switching Test Circuit & Waveforms



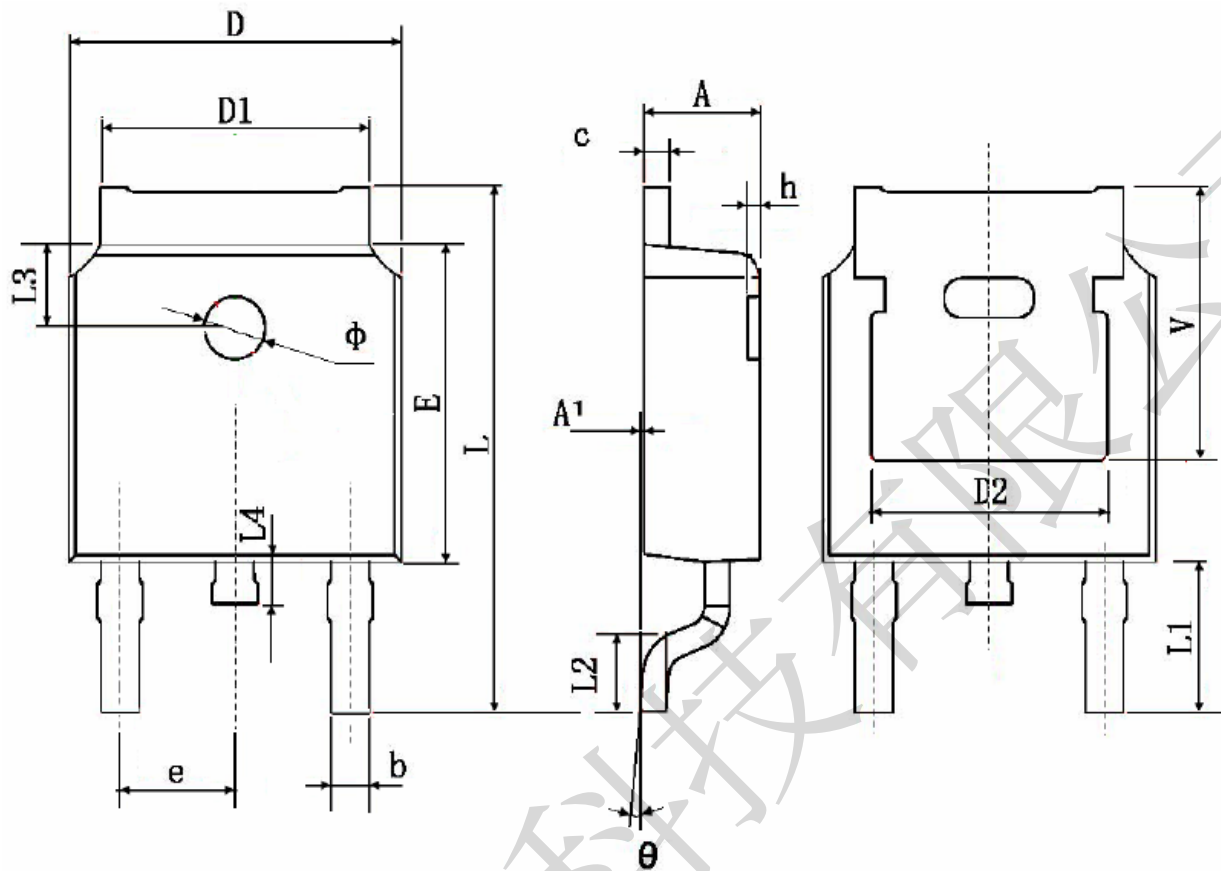
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



TO252-2L Package Outline Data



Symbol	Dimensions (unit : mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830(typ)		0.190(typ)	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900(typ)		0.114(typ)	
L2	1.400	1.700	0.055	0.067
L3	1.600(typ)		0.063(typ)	
L4	0.600	1.000	0.043	0.051
θ	0°	8°	0°	8°
Φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.350 (typ)		0.211 (typ)	