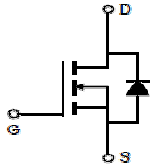
SKYSILICON

SKD430T

Features

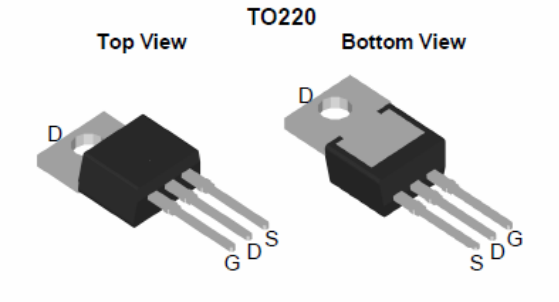
- Lead free and Green Device Available
- Low Rds-on to Minimize Conductive Loss
- High avalanche Current



V_{DSS}	80V
$R_{DS(on)}$ typ.	3mΩ
max.	4mΩ
$I_{D(Silicon\ Limited)}$	160A
$I_{D(Package\ Limited)}$	120A

Application

- Power Supply
- DC-DC Converter



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

Symbol	Param		Maximum	Unit
V_{DSS}	Drain-to-Source Voltage		80	V
V_{GSS}	Gate-to-Source Voltage		±25	V
I_D	Continuous Drain Current	T_C=25°C (Silicon limited)	160	A
		T_C=25°C (Package limited)	120	
		T_C=100°C	113	
I_{DP}	Pulsed Drain Current	T_C=25°C	-	A
I_{AS}	Avalanche Current (L=0.5mH)		43	A
E_{AS}	Avalanche Energy (L=0.5mH)		462	mJ
P_D	Maximum Power Dissipation	T_C=25°C	192	W
		T_C=100°C	96	
T_J, T_{STG}	Junction & Storage Temperature Range		-55~175	°C

Thermal Characteristics

Symbol	Parameter	Max.	Unit
R_{thJC}	Thermal resistance, junction to case	0.78	℃/W
R_{thJA}	Thermal resistance, junction to ambient	74	℃/W

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

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	80	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,V_{GS}=0V	—	—	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	—	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V	—	—	±100	nA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=80A	—	3	4	mΩ
G_{fs}	Forward Transconductance	VDS=5V, ID=90A	—	200	—	S

Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD}=40A,V_{GS}=0V	—	0.9	1.3	V
I_S	Diode Continuous Forward Current		—	—	120	A
t_{rr}	Reverse Recovery Time	IS=90A, di/dt=100A/us	—	48	—	nS
Q_{rr}	Reverse Recovery Charge		—	81	—	nC
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, Frequency=1MHz	—	1.4	—	Ω
C_{iss}	Input Capacitance	VGS=0V, VDS=40V, F=1MHz	—	8170	—	pF
C_{oss}	Output Capacitance		—	925	—	
C_{rss}	Reverse Transfer Capacitance		—	712	—	
$t_{d(on)}$	Turn-On Delay Time	VDS=40V, ID=40A, Rg=3 Ω, VGS=10V	—	25	—	nS
t_r	Rise Time		—	78	—	
$t_{d(off)}$	Turn-Off Delay Time		—	130	—	
t_f	Fall Time		—	76	—	
Gate Charge Characteristics						
Q_g	Total Gate Charge	VDS=64V，VGS=10V，ID=50A	—	177	—	nC
Q_{gs}	Gate-to-Source Charge		—	22	—	
Q_{gd}	Gate-to-Drain Charge		—	83	—	

Typical Operating Characteristics

Figure 1. Typ. Output Characteristics

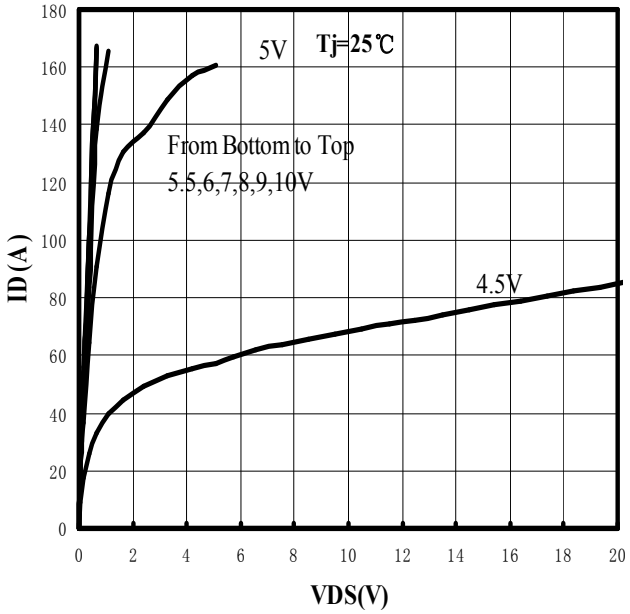


Figure 2. Typ. Output Characteristics

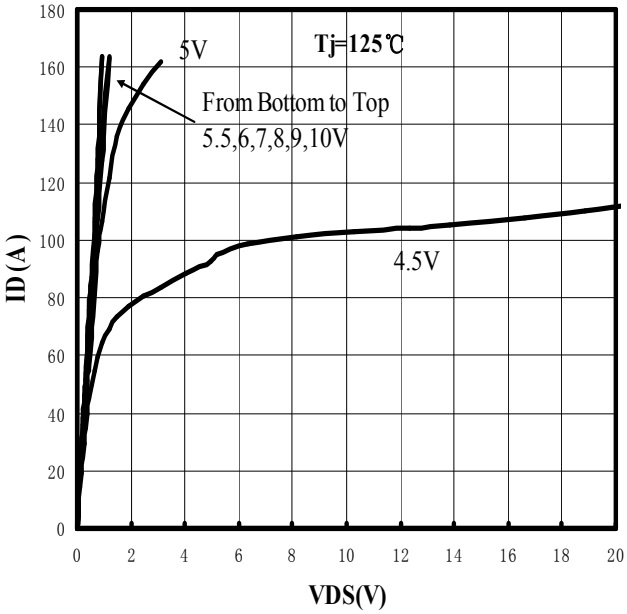


Figure 3. Transfer Characteristics

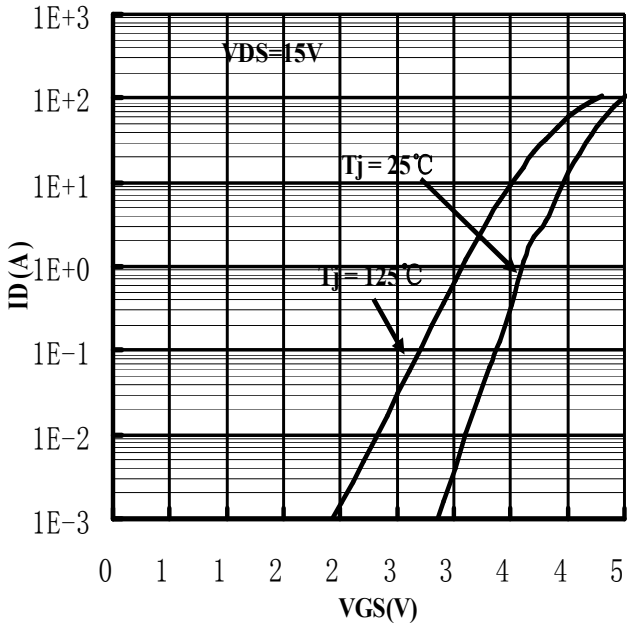
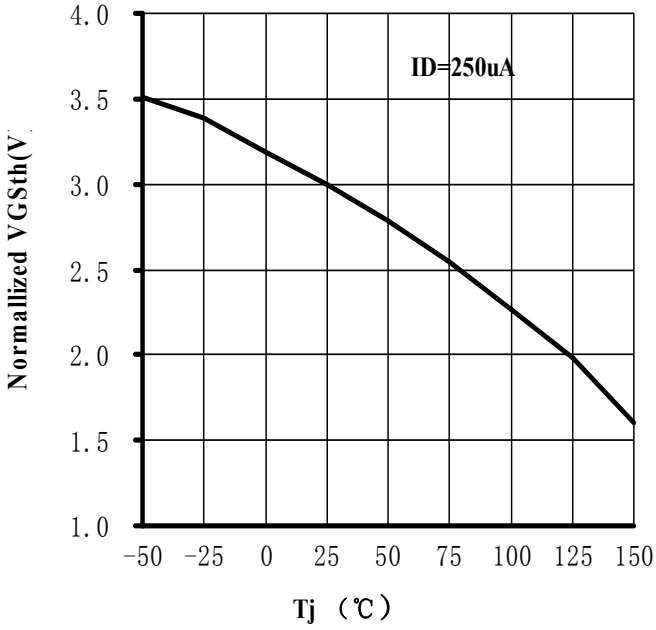


Figure 4. Gate Threshold Voltage Characteristics



Typical Operating Characteristics

Figure 5. Rdson vs. Drain Current Characteristics

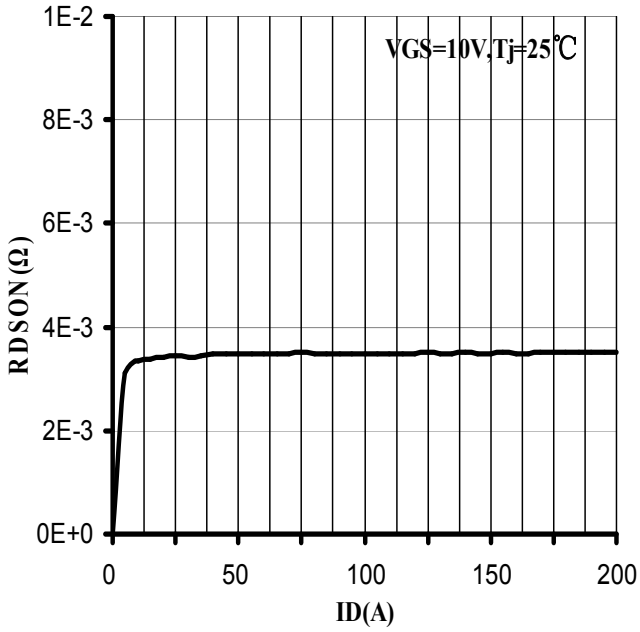


Figure 6. Rdson vs. Junction Tem Characteristics

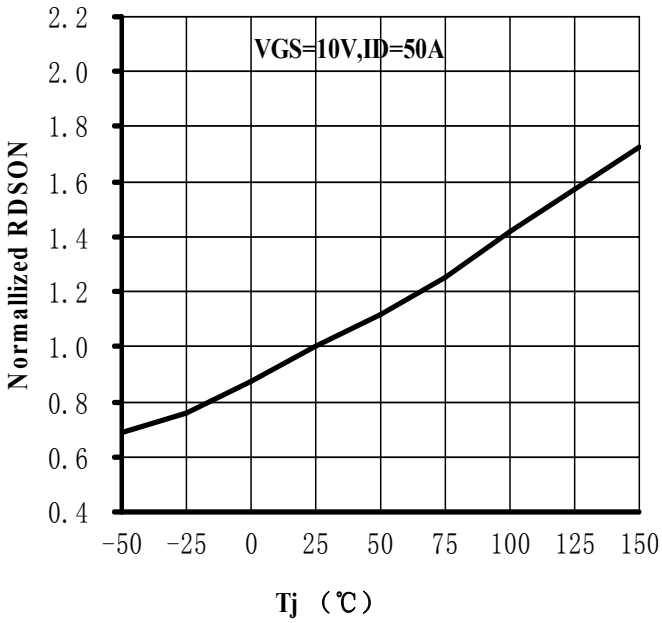


Figure 7. Rdson vs. VGS Characteristics

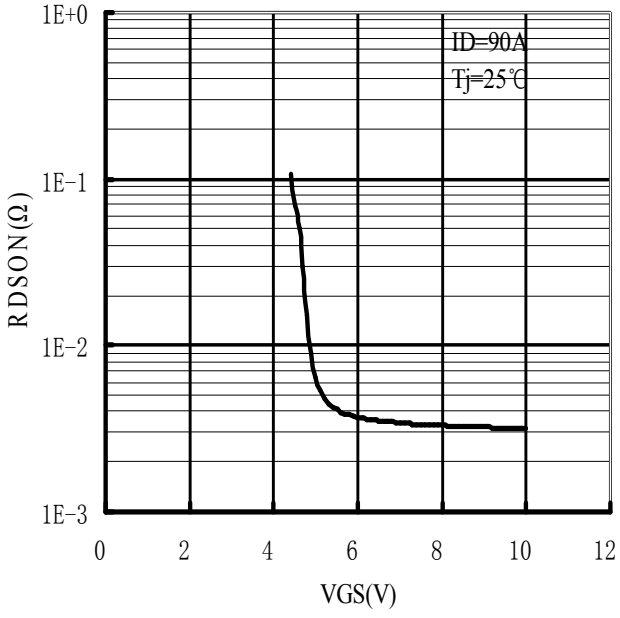
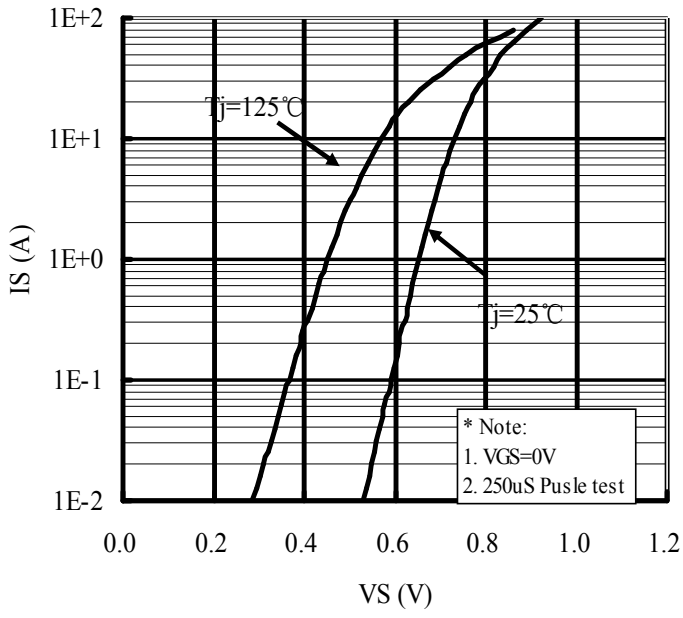


Figure 8. IS vs. VSD Characteristics



Typical Operating Characteristics

Figure 9. Gate Charge Characteristics

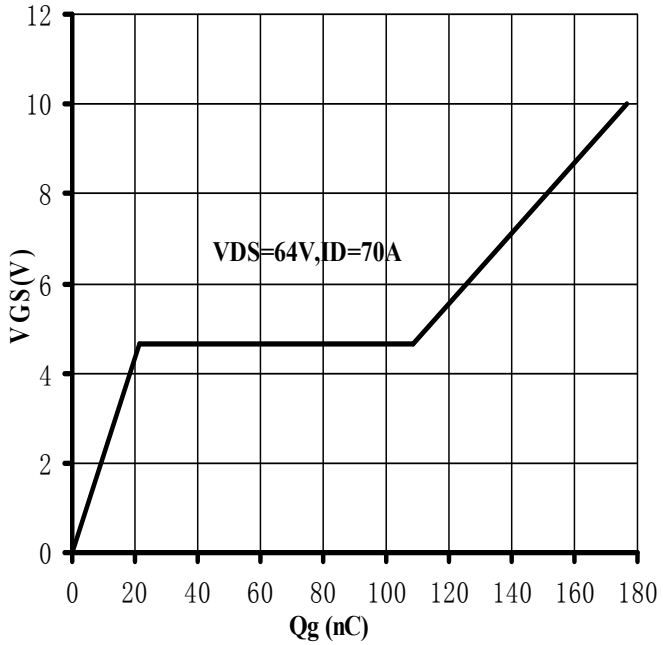


Figure 10. Capacitance Characteristics

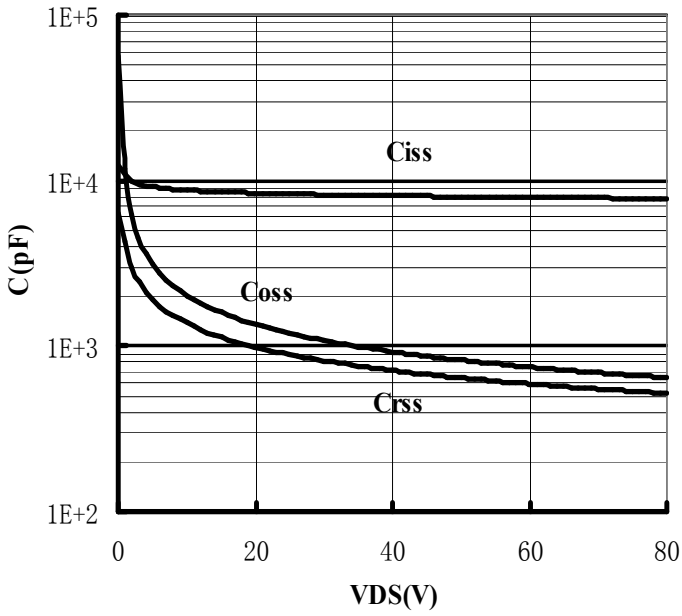
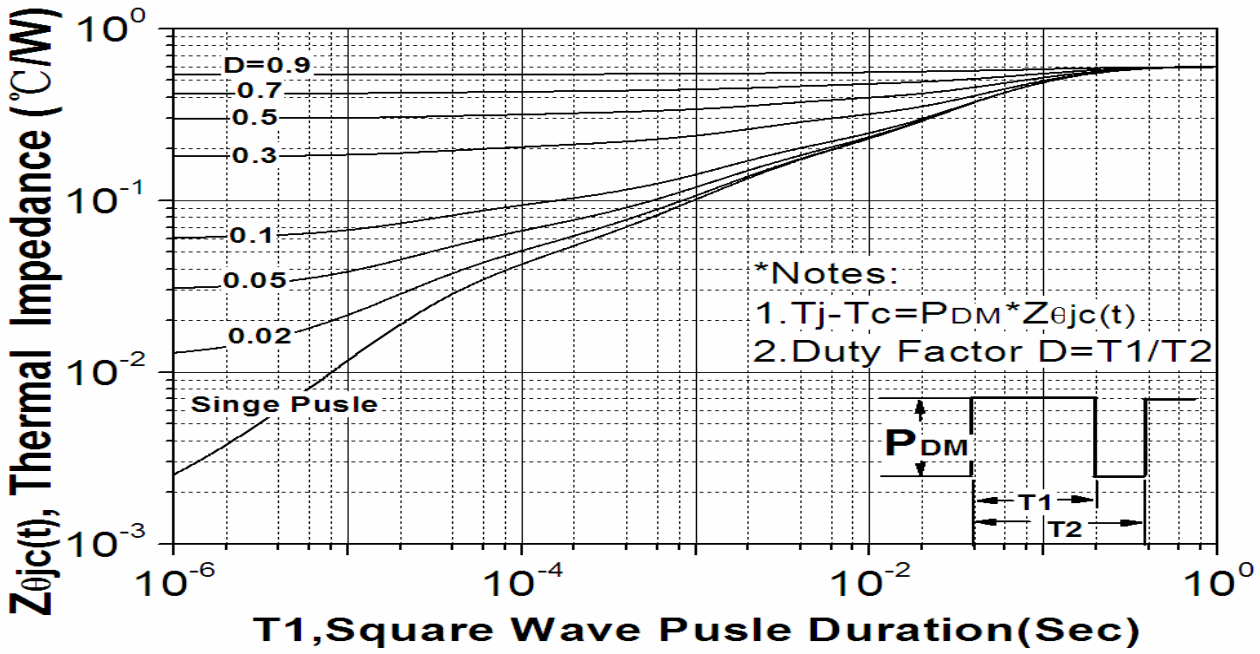
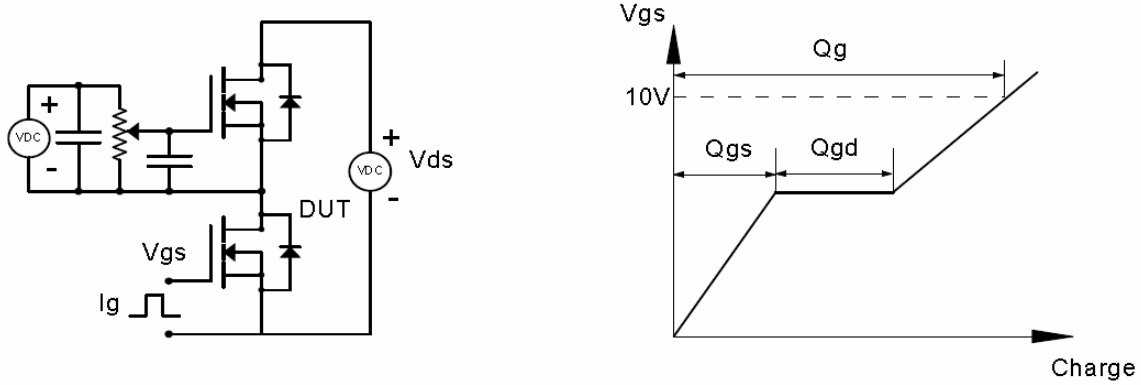


Figure 11. Thermal Resistance Characteristics

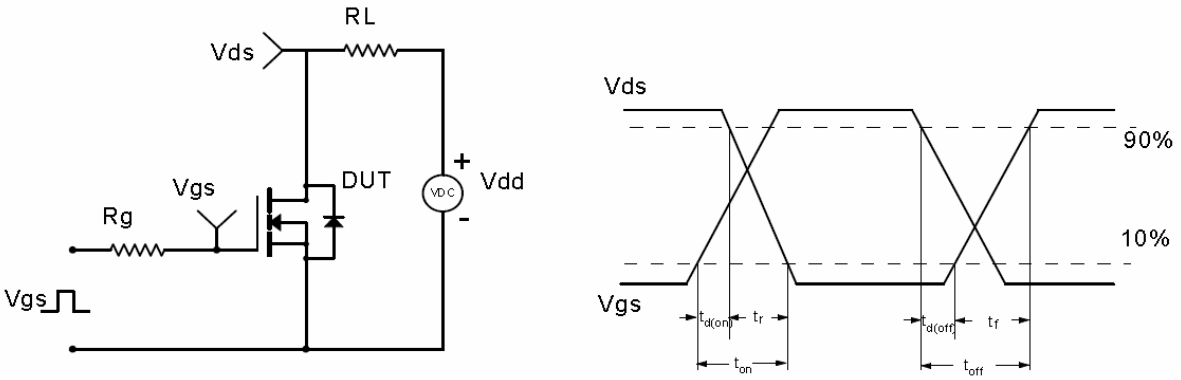


Test Circuit & Waveform

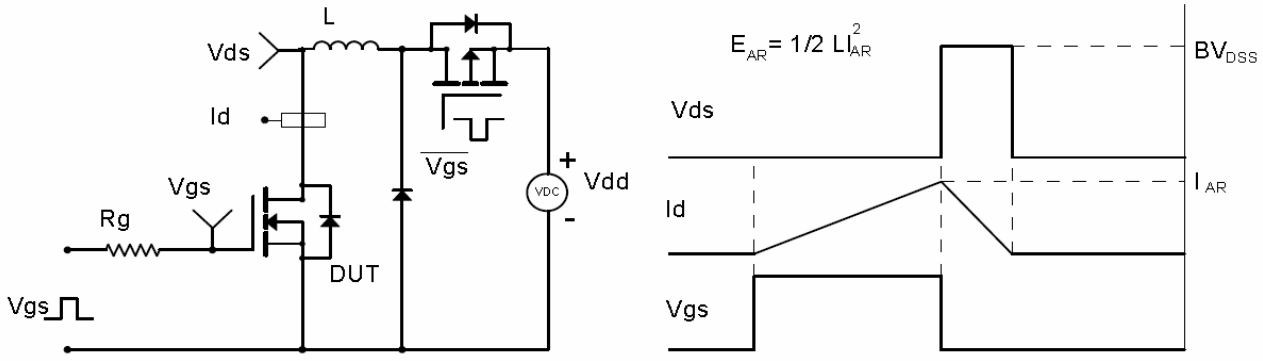
Gate Charge Test Circuit & Waveform



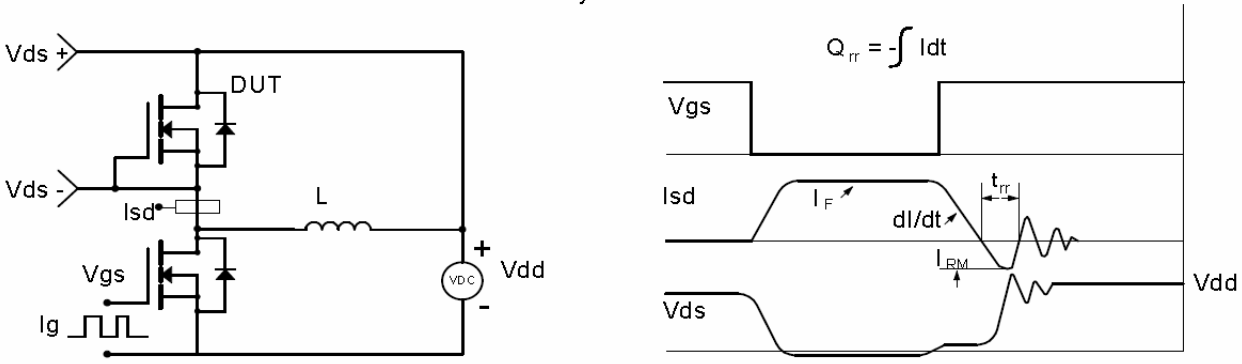
Resistive Switching Test Circuit & Waveforms



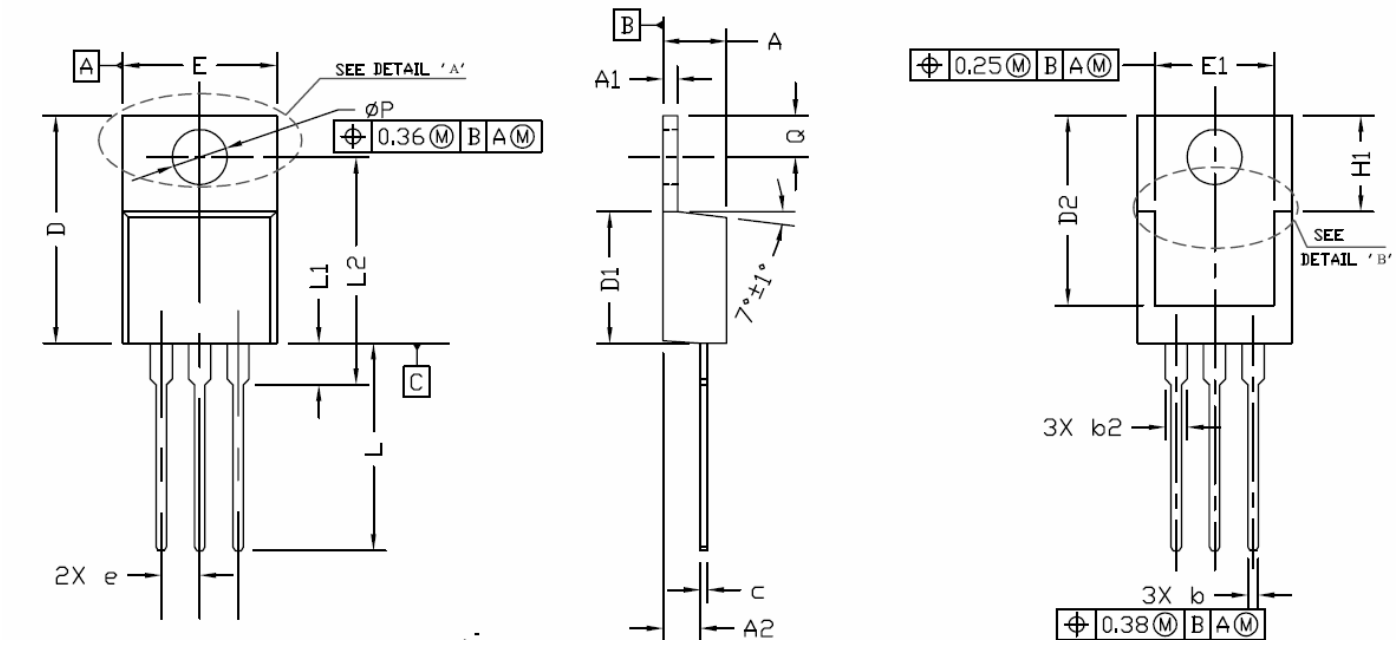
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

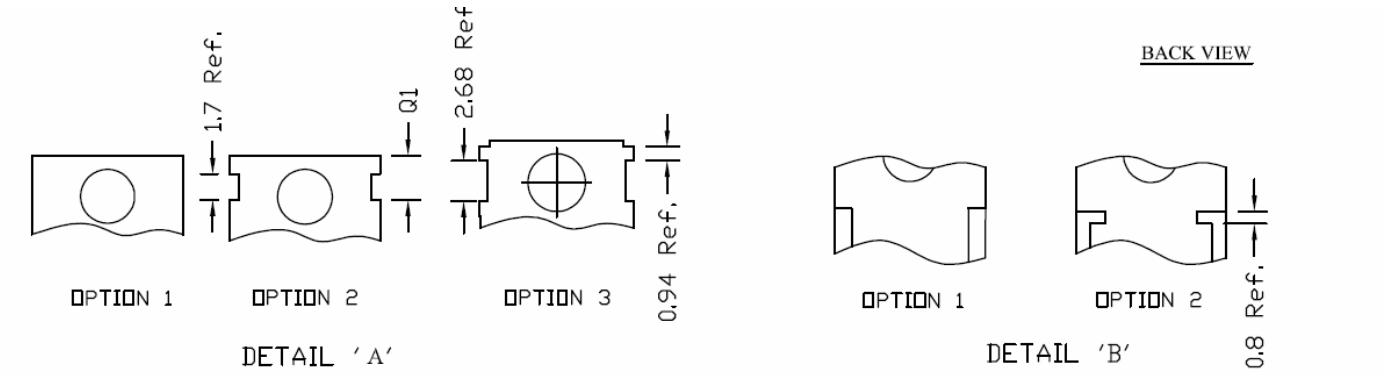


Diode Recovery Test Circuit & Waveforms

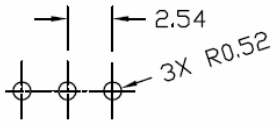


Package Information





RECOMMENDATION OF HOLE PATTERN



UNIT: mm

NOTE
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS. MOLD FLASH SHOULD BE LESS THAN 6 MIL.
2. TOLERANCE 0.100 MILLIMETERS UNLESS OTHERWISE SPECIFIED.
3. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	4.30	4.45	4.72	0.169	0.175	0.186
A1	1.15	1.27	1.40	0.045	0.050	0.055
A2	2.20	2.67	2.90	0.087	0.105	0.114
b	0.69	0.81	0.95	0.027	0.032	0.037
b2	1.17	1.37	1.45	0.046	0.050	0.068
c	0.36	0.38	0.60	0.014	0.015	0.024
D	14.50	15.44	15.80	0.571	0.608	0.622
D1	8.59	9.14	9.65	0.338	0.360	0.380
D2	11.43	11.73	12.48	0.450	0.462	0.491
e	2.54 BSC			0.100 BSC.		
E	9.66	10.03	10.54	0.380	0.395	0.415
E1	6.22	---	---	0.245	---	---
H1	6.10	6.30	6.50	0.240	0.248	0.256
L	12.27	12.82	14.27	0.483	0.505	0.562
L1	2.47	---	3.90	0.097	---	0.154
L2	---	---	16.70	---	---	0.657
Q	2.59	2.74	2.89	0.102	0.108	0.114
øP	3.50	3.84	3.89	0.138	0.151	0.153
Q1	2.70	---	2.90	0.106	---	0.114