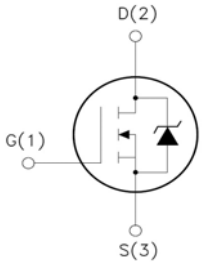
HM6N65I

Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg=14nC (Typ.).
- ☐ BVDSS=650 V,I_D=6A
- ☐ R_{DS}(on) : 2.50Ω (Max) @V_G=10V
- ☐ 100% Avalanche Tested

TO-251

RoHS COMPLIANT



1.Gate (G)
2.Drain (D)
3.Source (S)

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		650	V
I_D	Drain Current	T_j=25℃	6.0	A
		T_j=100℃	3.5	
$V_{GSS(TH)}$	Gate Threshold Voltage		30	V
E_{AS}	Single Pulse Avalanche Energy (note1)		120	mJ
I_{AR}	Avalanche Current (note2)		6.0	A
P_D	Power Dissipation (Tj=25 ℃)		50	W
T_j	Junction Temperature(Max)		150	℃
T_{stg}	Storage Temperature		-55~+150	℃
TL	Maximum lead temperature for soldering purpose,1/8'from case for 5 seconds		300	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case	-	2.4	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient		62.5	℃/W

Electrical Characteristics (Ta=25℃ unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Chara cteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250 μA , V_{GS}=0	650	-	-	V
△BVDSS/ △TJ	Breakdown Voltage Temperature Coefficient	I_D=250 μA ,Reference to 25 ℃	-	0.67	-	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=650V, V_{GS}=0V	-	-	10	μA
		V_{DS} =520V, Tj=125℃			100	
I_{GSSF}	Gate-body leakage Current, Forward	V_{GS} =+30V, V_{DS}=0V	-	-	100	nA
I_{GSSR}	Gate-body leakage Current, Reverse	V_{GS} =-30V, V_{DS}=0V	-	-	-100	
On Characteristics						
$V_{GS(TH)}$	Date Threshold Voltage	I_D=250μA,V_{DS} =V_{GS}	2	-	4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	I_D=2.0A,V_{GS} =10V	-		2.5	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	V_{DS}=25V , V_{GS}=0 , f=1.0MHz	-	560	-	pF
Coss	Output Capacitance		-	48	-	
Crss	Reverse Transfer Capacitance		-	5.4	-	
Sw itching Characteristics						
Td(on)	Turn-On Delay Time	V_{DD}=325V , I_D=5A R_G =25Ω (Note 3,4)	-	25		nS
Tr	Turn-On Rise Time		-	45		
Td(off)	Turn-Off Delay Time		-	25		
Tf	Turn-Off Rise Time		-	35		
Qg	Total Gate Charge	V_{DS}=520V,V_{GS} =10V , I_D=5A (Note3,4)	-	14 . 3		nC
Qgs	Gate-Source Charge		-	2.8	-	
Qgd	Gate-Drain Charge		-	4.5	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Is	Max. Diode Forward Current	-		- -	4.2	A
I_{SM}	Max. Pulsed Forward Current	-		- -	18	
V_{SD}	Diode Forward Voltage	I_D=5A	-	-	1.4	V
Trr	Reverse Recovery Time	I_S=5A,V_{GS} =0V diF/dt=100A/μs (Note3)	-	393	-	nS
Qrr	Reverse Recovery Charge		-	1.5	-	μC

Notes : 1, L=0.5mH, IAS= 5A, VDD=50V, RG=25Ω , Starting TJ =25℃

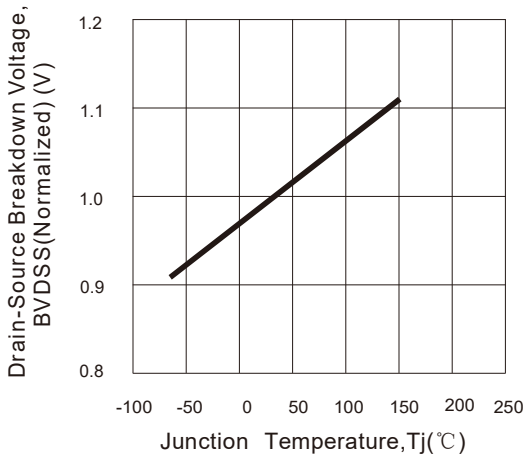
2, Repetitive Rating : Pulse width limited by maximum junction temperature

3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

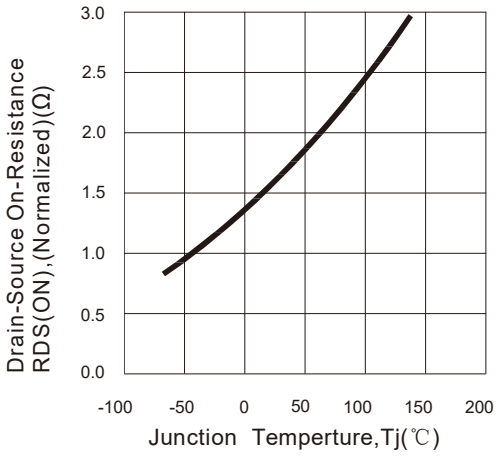
4, Essentially Independent of Operating Temperature

Typical Characteristics

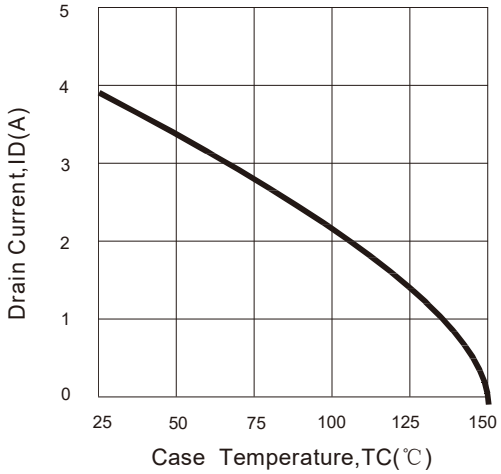
Breakdown Voltage Variation
VS. Temperayure



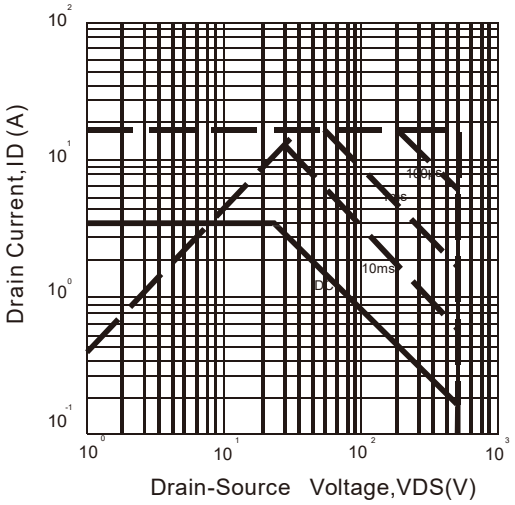
On-Resistance Junction
Temperature



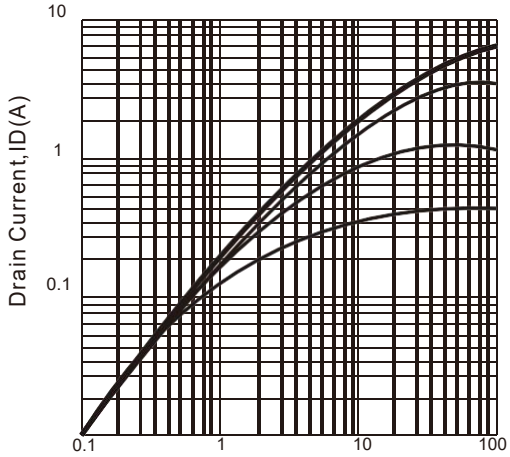
Maximum Drain Current
VS.Case Temperature



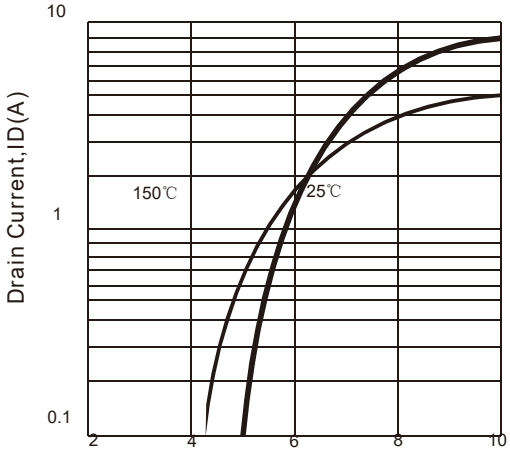
Maximum Safe Operating Area



On-State Characteristics

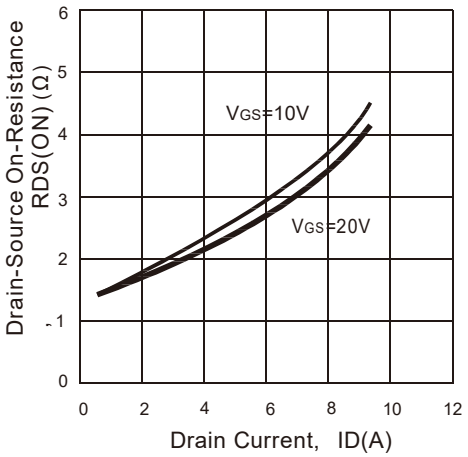


Transfer Characteristics

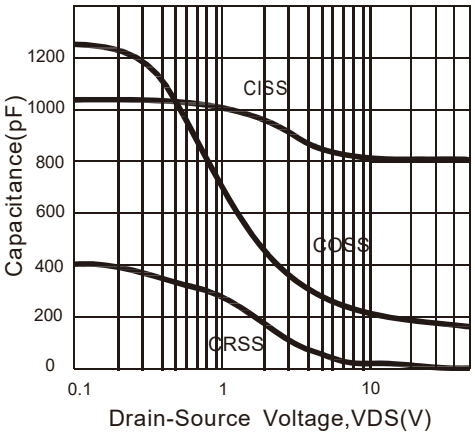


Typical Characteristics (Continued)

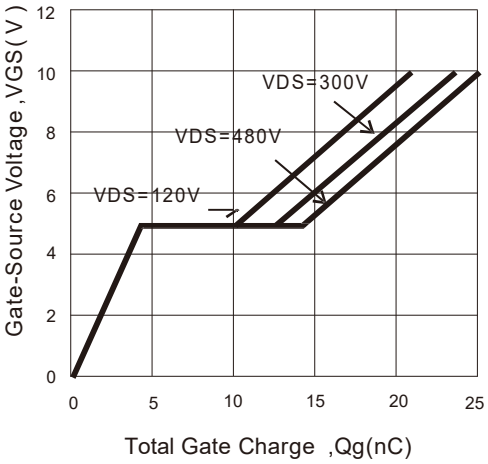
On-Resistance Variation vs.
Drain Currentand Gate Voltage



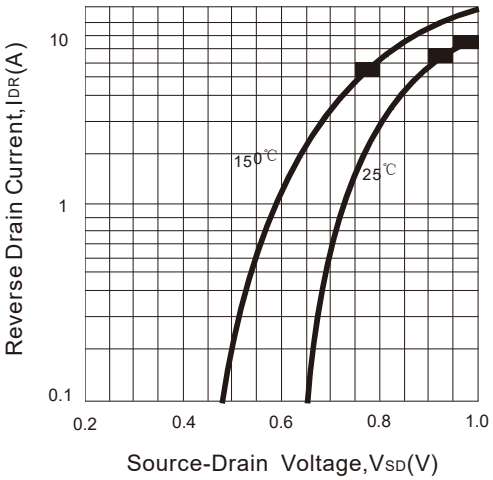
Capacitance Characteristics
(Non-Repetitive)



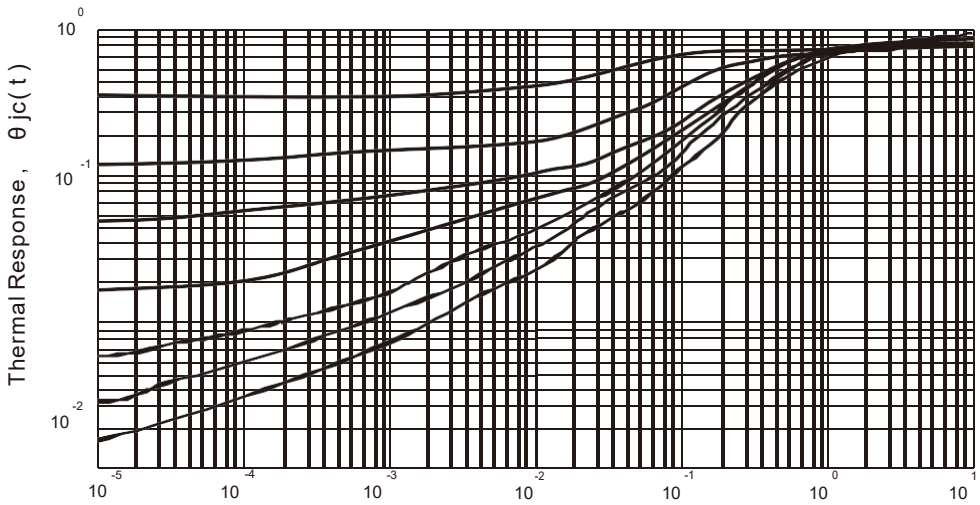
Gate Charge Characteristics



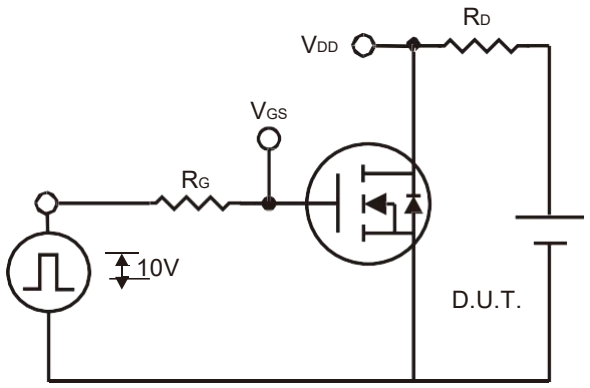
Body Diode Forward Voltage Variation
With Source Current and Temperature



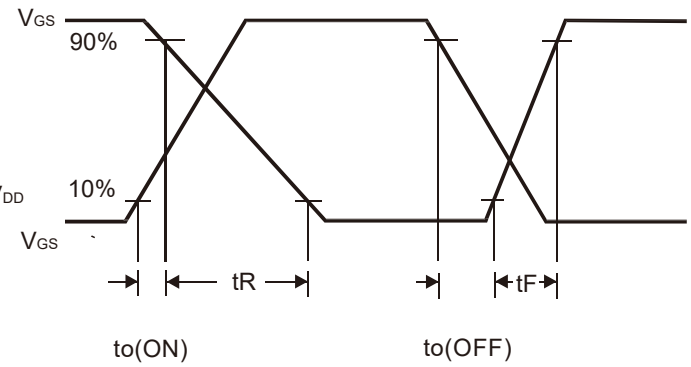
Transient Thermal Response Curve



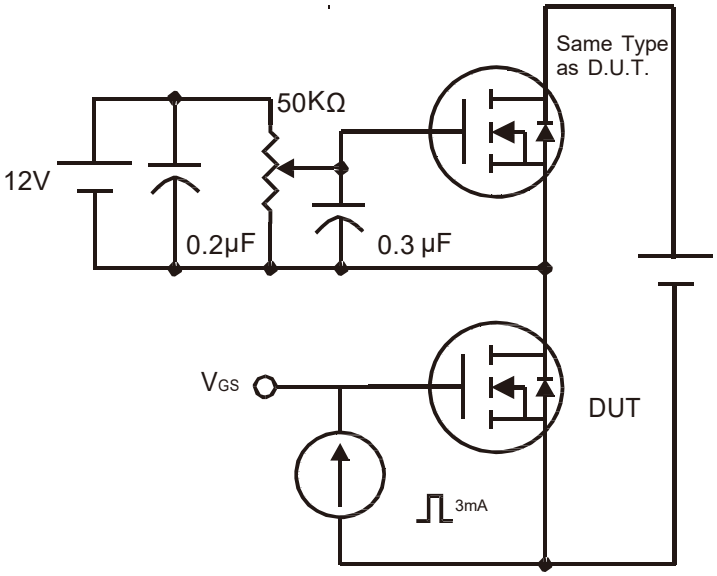
Gate Charge Test Circuit & Waveform



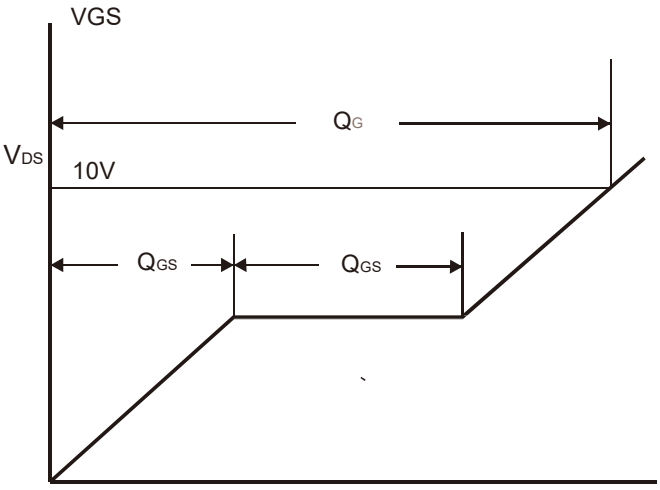
Switching Test Circuit



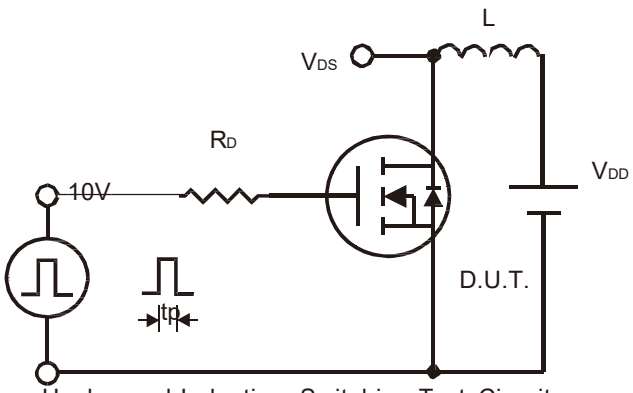
Switching Waveforms



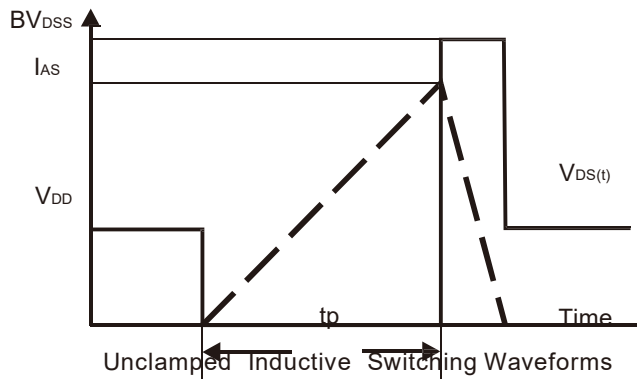
Gate Charge Test Circuit



Gate Charge Waveform

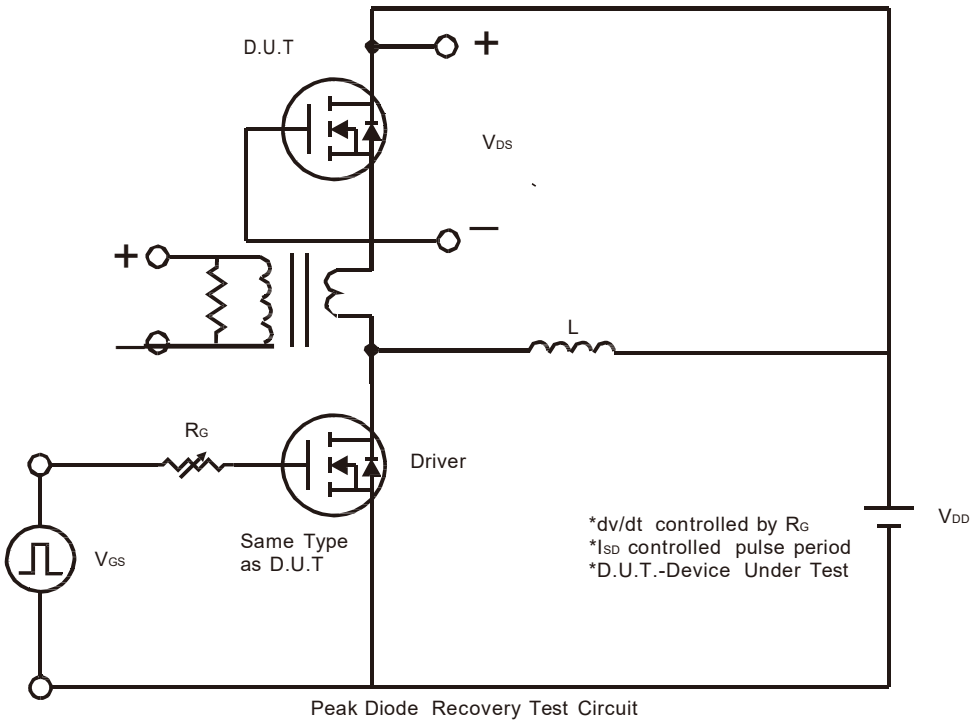


Unclamped Inductive Switching Test Circuit

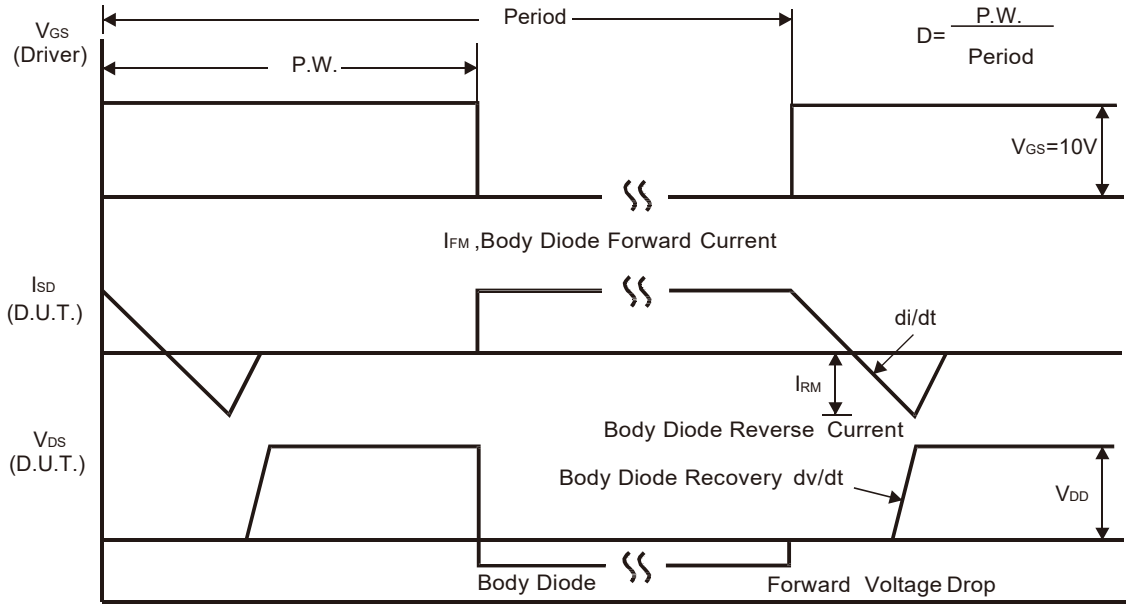


Unclamped Inductive Switching Waveforms

Peak Diode Recovery dv/dt Test Circuit & Waveform



Peak Diode Recovery Test Circuit

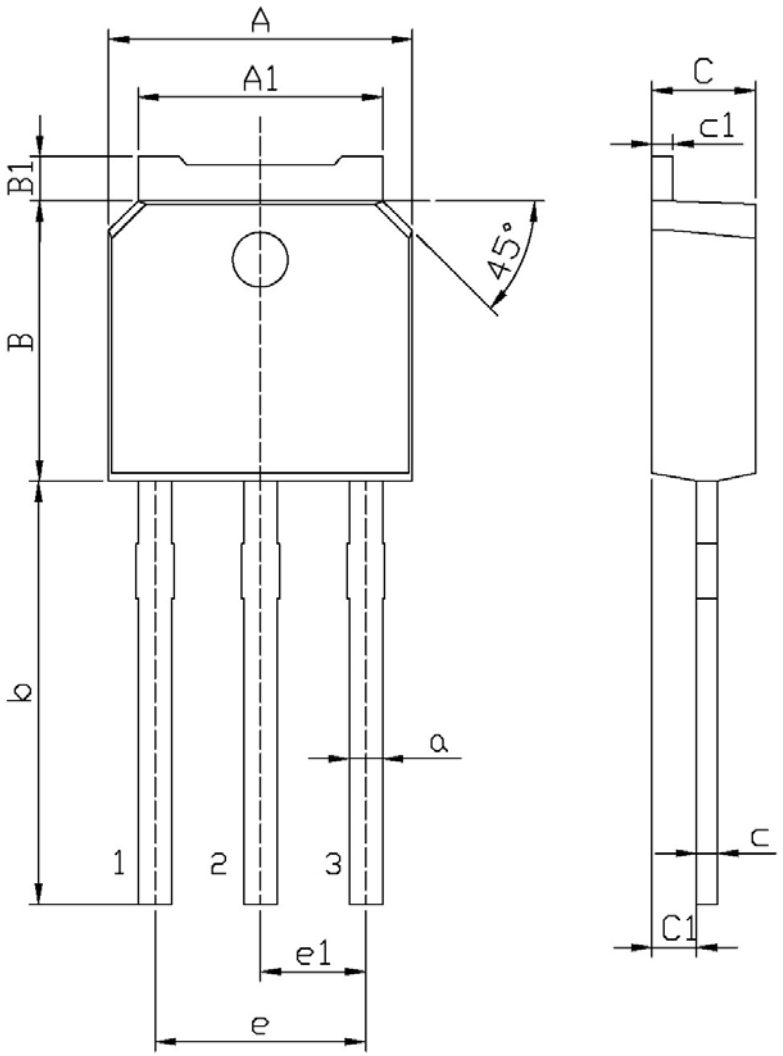


Peak Diode Recovery dv/dt Waveforms

Package Dimension

TO-251

Unit: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	6.45	6.75	a	0.70	0.90
A1	5.20	5.40	b	9.00	9.40
B	5.95	6.25	c	0.45	0.55
B1	0.95	1.25	c1	0.45	0.55
C	2.20	2.40	e1	2.24	2.34
C1	0.95	1.15	e	4.43	4.73