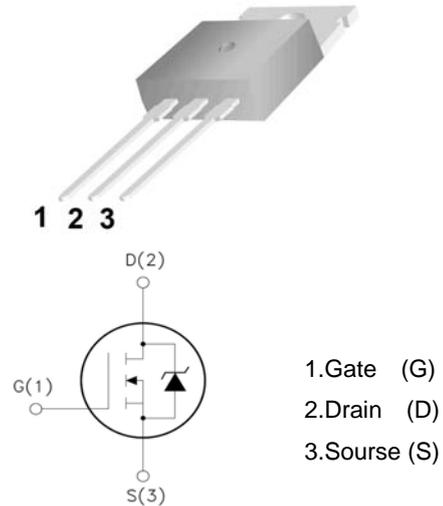


TKP10N65SE

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg=35nC (Typ.).
- BVDS=650 V, I_D=10A
- R_{DS(on)} : 0.9 Ω (Max) @V_G=10V
- 100% Avalanche Tested

TO-220



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

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

Symbol	Parameter	Value	Unit
V _{DSS}	Drain-Source Voltage	650	V
I _D	Drain Current	T _j =25°C	10
		T _j =100°C	6.7
V _{GS(TH)}	Gate Threshold Voltage	30	V
E _{AS}	Single Pulse Avalanche Energy (note1)	380	mJ
I _{AR}	Avalanche Current (note2)	10	A
P _D	Power Dissipation (T _j =25°C)	65	W
T _j	Junction Temperature(Max)	150	°C
T _{stg}	Storage Temperature	-55~+150	°C
TL	Maximum lead temperature for soldering purpose,1/8' from case for 5 seconds	300	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance,Junction to Case	-	2.4	°C/W
R _{θJA}	Thermal Resistance,Junction to Ambient	-	62.5	°C/W

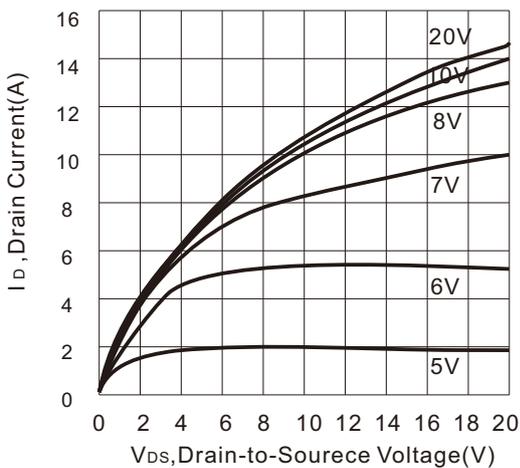
Electrical Characteristics (Ta=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA , V _{GS} =0	650	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA , Reference to 25°C	-	0.67	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V	-	-	10	μA
		V _{DS} =520V, T _J =125°C			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)}	Gate Threshold Voltage	I _D =250μA, V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =5.0A, V _{GS} =10V	-	0.8	0.9	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0 , f=1.0MHz	-	1500	-	pF
C _{oss}	Output Capacitance		-	194	-	
C _{rss}	Reverse Transfer Capacitance		-	18	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =325V , I _D =10A R _G =25Ω (Note 3,4)	-	23		nS
T _r	Turn-On Rise Time			15		
T _{d(off)}	Turn-Off Delay Time			90		
T _f	Turn-Off Rise Time			30		
Q _g	Total Gate Charge	V _{DS} =520V, V _{GS} =10V , I _D =10A (Note3,4)	-	35		nC
Q _{gs}	Gate-Source Charge			7	-	
Q _{gd}	Gate-Drain Charge			18	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Max. Diode Forward Current	-		-	10	A
I _{SM}	Max. Pulsed Forward Current	-		-	40	
V _{SD}	Diode Forward Voltage	I _D =10A	-	-	1.4	V
T _{rr}	Reverse Recovery Time	I _S =10A, V _{GS} =0V diF/dt=100A/μs (Note3)	-	320	-	nS
Q _{rr}	Reverse Recovery Charge		-	4.2	-	μC

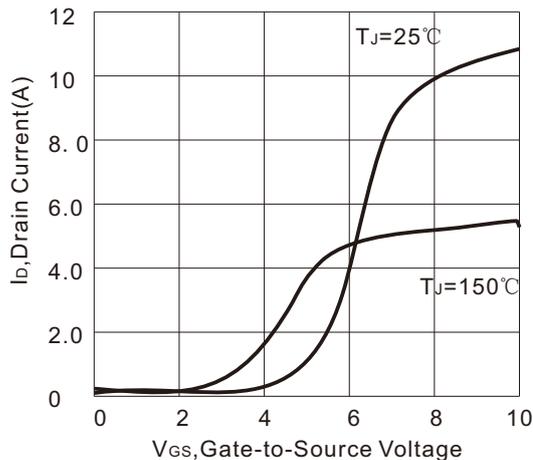
Notes : 1, L=0.5mH, I_{AS}= 10A, V_{DD}=50V, R_G=25Ω , Starting T_J =25°C
 2, Repetitive Rating : Pulse width limited by maximum junction temperature
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 4, Essentially Independent of Operating Temperature

Typical Characteristics

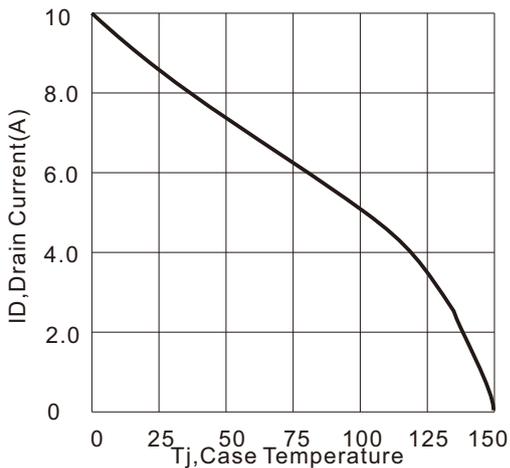
Output Characteristics



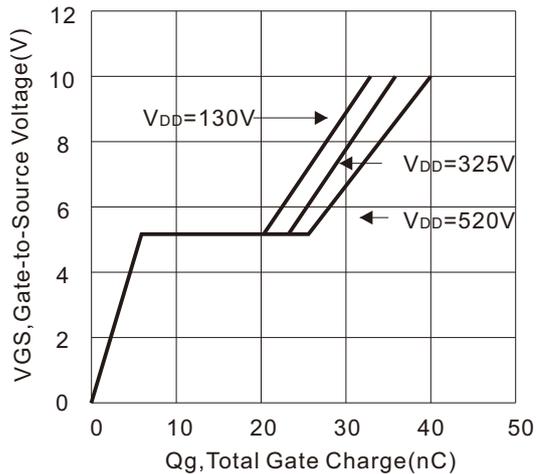
Transfer Characteristics



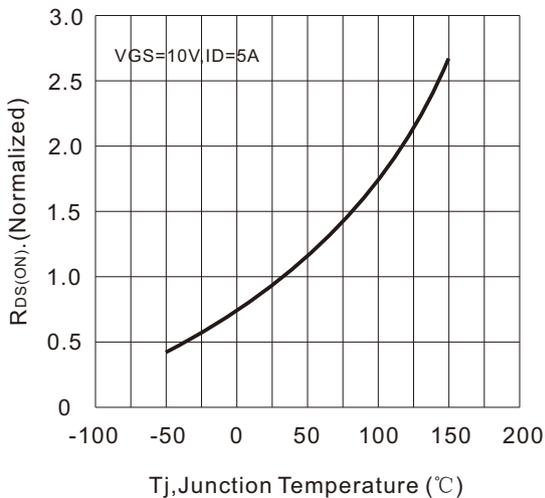
Drain Current VS. Temperature



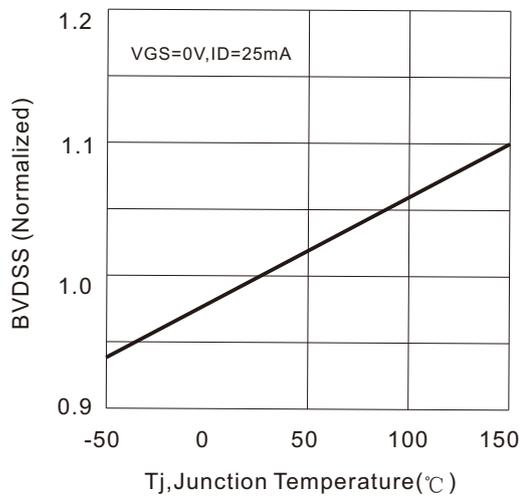
Gate Charge



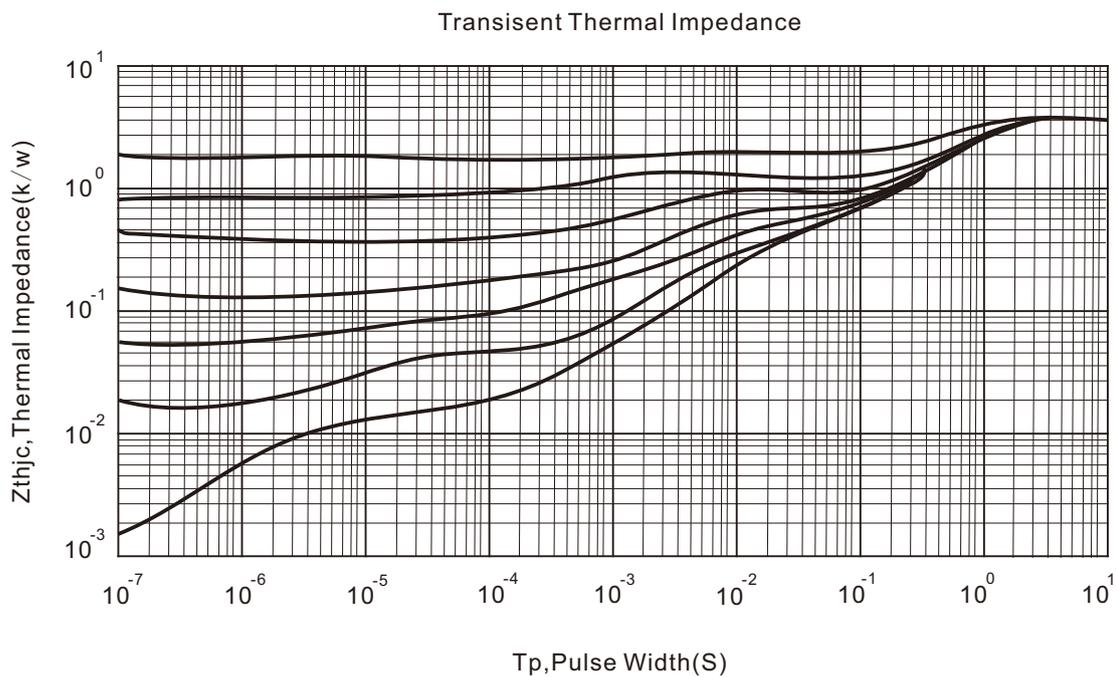
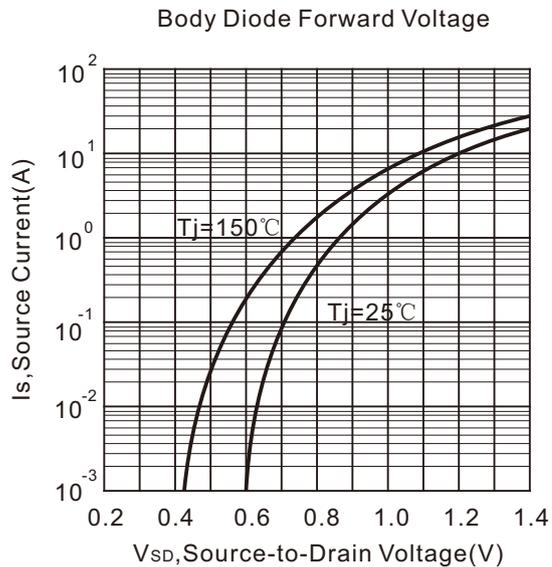
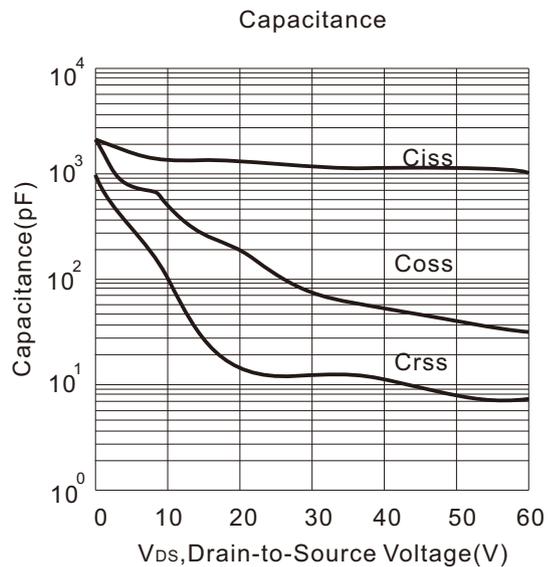
On-Resistance vs. Junction Temperature



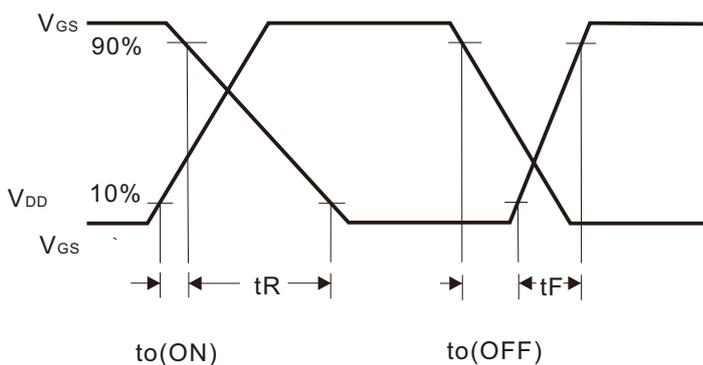
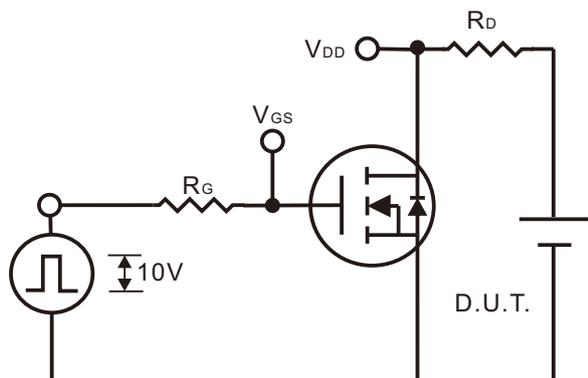
BVDS Variation VS. Temperature



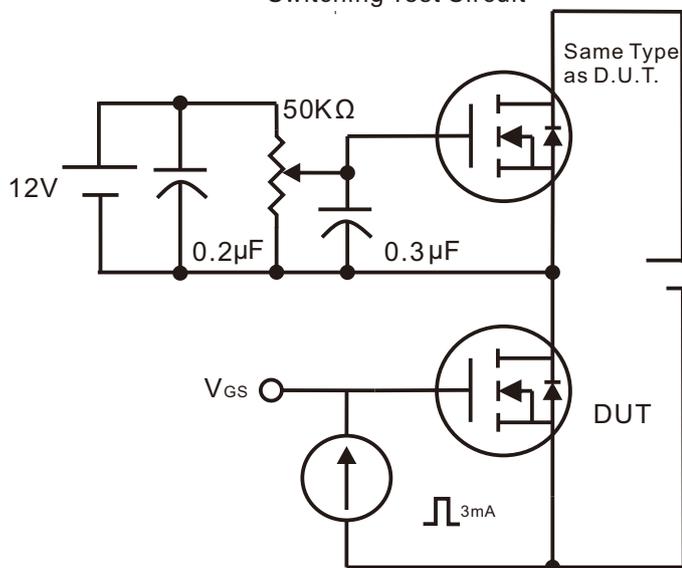
Typical Characteristics (Continued)



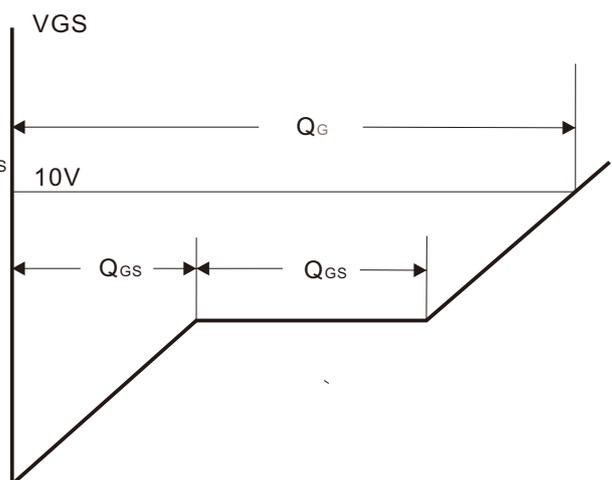
Gate Charge Test Circuit & Waveform



Switching Test Circuit

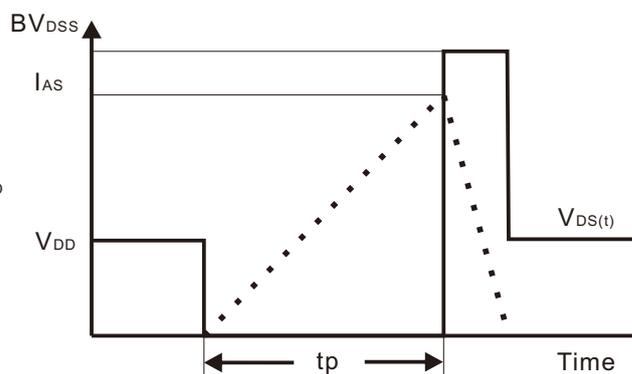
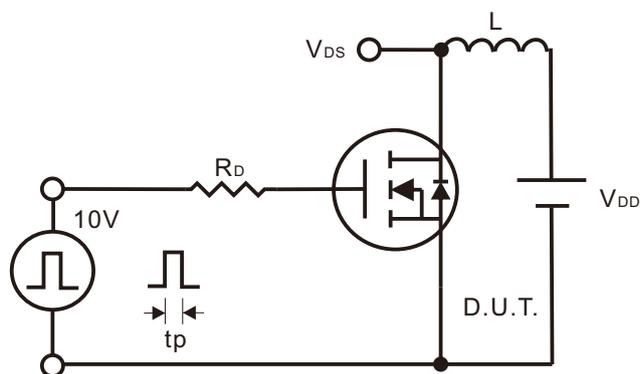


Switching Waveforms



Gate Charge Test Circuit

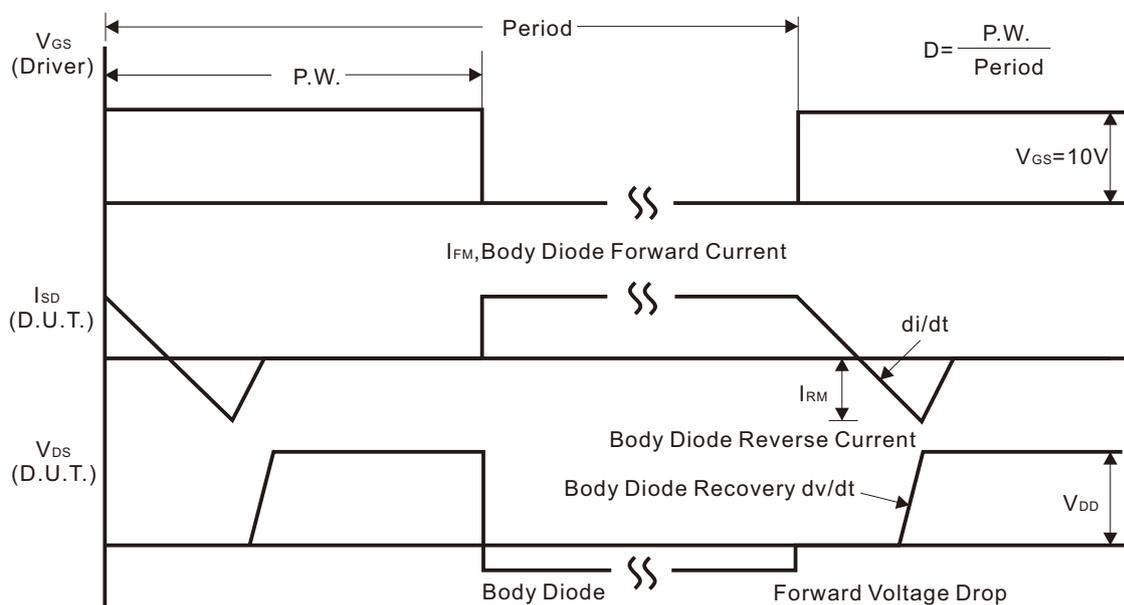
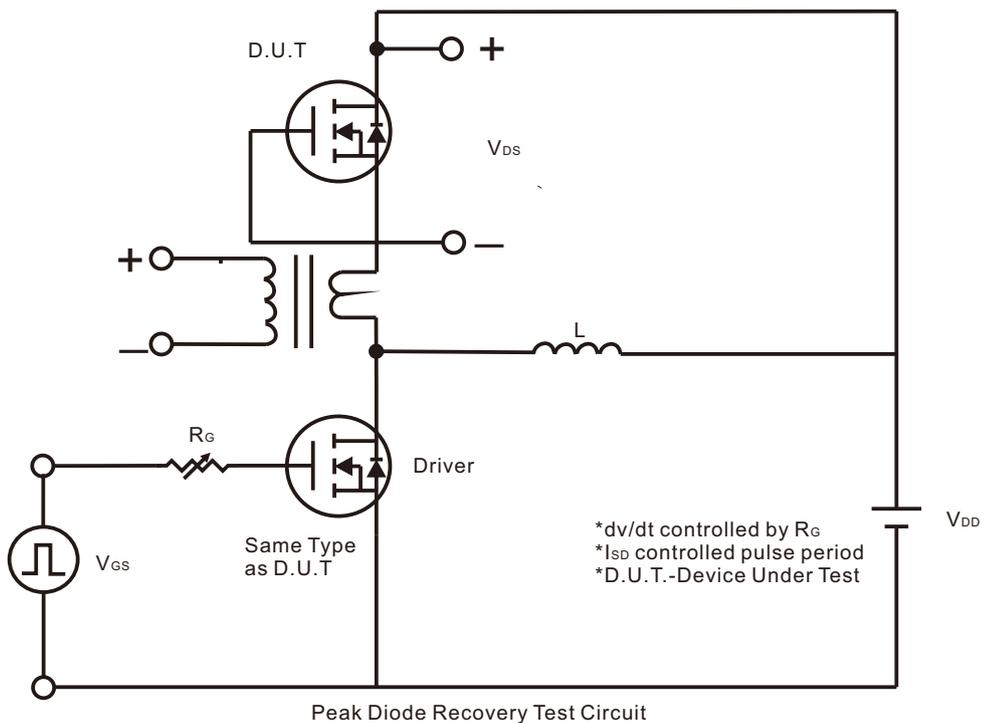
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

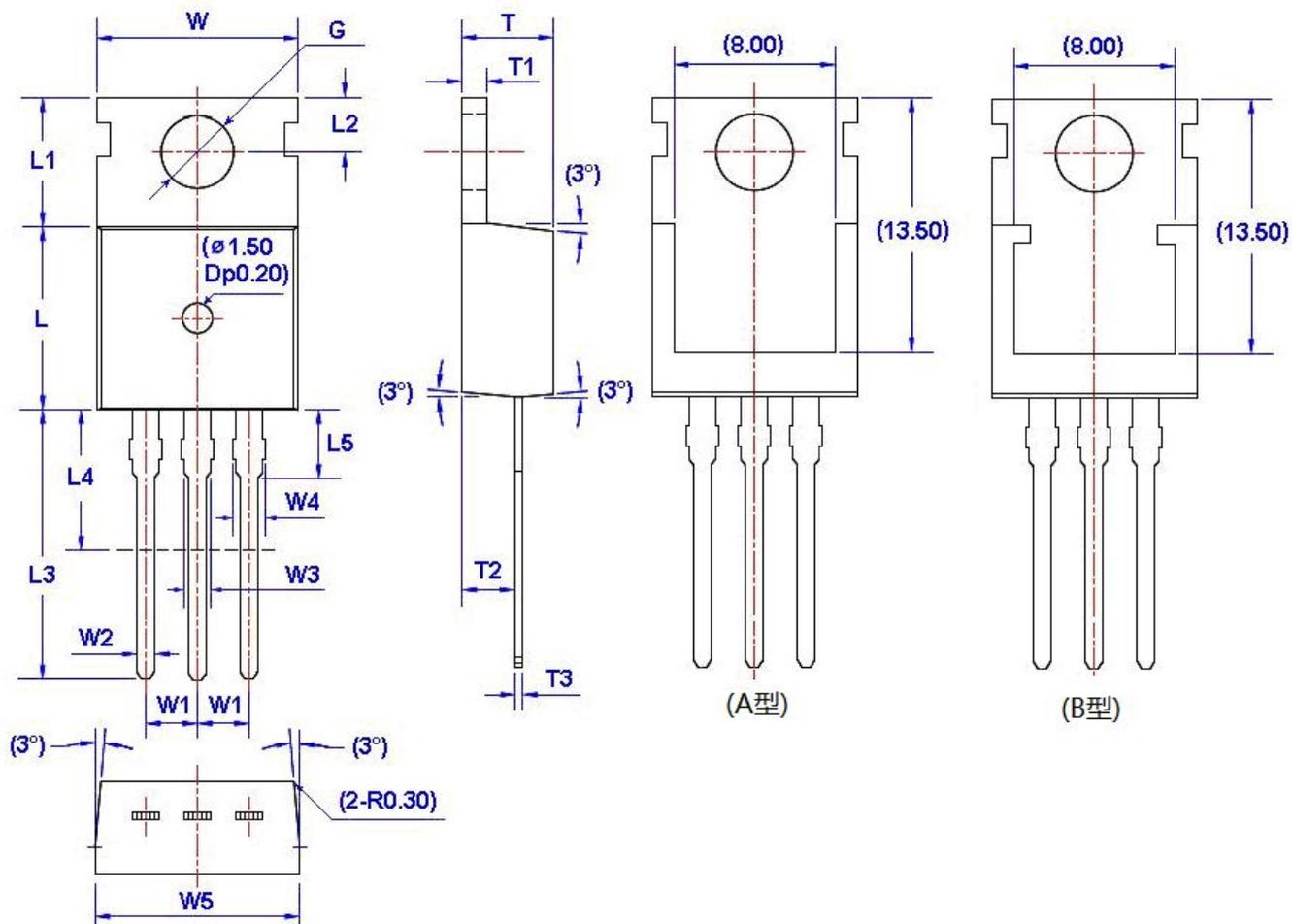
Peak Diode Recovery dv/dt Test Circuit & Waveform



Peak Diode Recovery dv/dt Waveforms

Package Dimension

Unit:mm



符号	尺寸		符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max		Min	Max
W	9.66	10.28	W5	9.80	10.20	L4**	6.20	6.60	T3	0.45	0.60
W1	2.54 (TYP)		L	9.00	9.40	L5	2.79	3.30	G(Φ)	3.50	3.70
W2	0.70	0.95	L1	6.40	6.80	T	4.30	4.70			
W3	1.17	1.37	L2	2.70	2.90	T1	1.15	1.40			
W4*	1.32	1.72	L3	12.70	14.27	T2	2.20	2.60			