

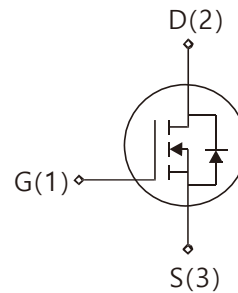
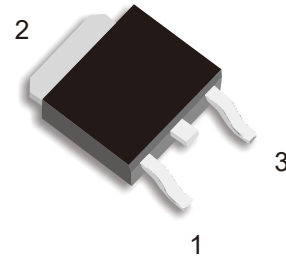
XXW5N65

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge : $Q_g=14\text{nC}$ (Typ.).
- $V_{DS}=650\text{V}, I_D=5\text{A}$
- $R_{DS(on)} : 2.50\Omega$ (Max) @ $V_G=10\text{V}$
- 100% Avalanche Tested



TO-252



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

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current	$T_j=25^\circ\text{C}$	5.0
		$T_j=100^\circ\text{C}$	2.7
V_{GSS}	Gate - Source voltage	30	V
E_{AS}	Single Pulse Avalanche Energy (note1)	120	mJ
I_{AR}	Avalanche Current (note2)	5.0	A
P_D	Power Dissipation ($T_j=25^\circ\text{C}$)	50	W
T_j	Junction Temperature(Max)	150	$^\circ\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^\circ\text{C}$
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds	300	$^\circ\text{C}$

Thermal Characteristics

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

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 =250 μA, V _{GS} =0	650	-	-	V
ΔBV _{DSS} / ΔT _J	Breakdown voltage temperature Coefficient	I _D =250 μA, 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 =2.0A, V _{GS} =10V	-		2.5	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0, f=1.0MHz	-	560	-	pF
C _{oss}	Output Capacitance		-	48	-	
C _{rss}	Reverse Transfer Capacitance		-	5.4	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =325V, I _D =5A, R _G =25Ω (Note 3,4)	-	25		nS
T _r	Turn-On Rise Time		-	45		
T _{d(off)}	Turn-Off Delay Time		-	25		
T _f	Turn-Off Rise Time		-	35		
Q _g	Total Gate Charge	V _{DS} =520V, V _{GS} =10V, I _D =5A (Note 3,4)	-	14.3		nC
Q _{gs}	Gate-Source Charge		-	2.8	-	
Q _{gd}	Gate-Drain Charge		-	4.5	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Max. Diode Forward Current	-		-	4	A
I _{SM}	Max. Pulsed Forward Current	-		-	16	
V _{SD}	Diode Forward Voltage	I _D =5A	-	-	1.4	V
T _{rr}	Reverse Recovery Time	I _S =5A, V _{GS} =0V, diF/dt=100A/μs (Note 3)	-	393	-	nS
Q _{rr}	Reverse Recovery Charge		-	1.5	-	μC

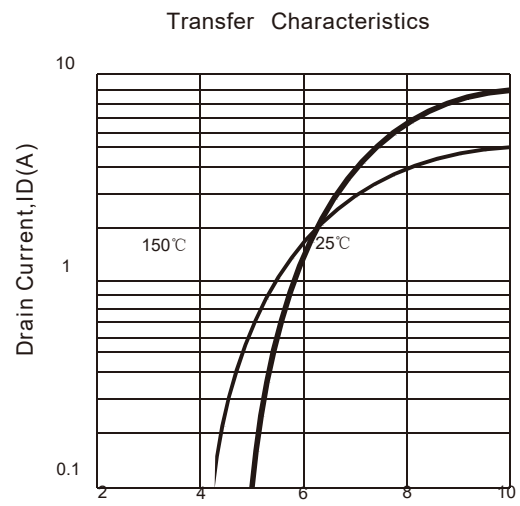
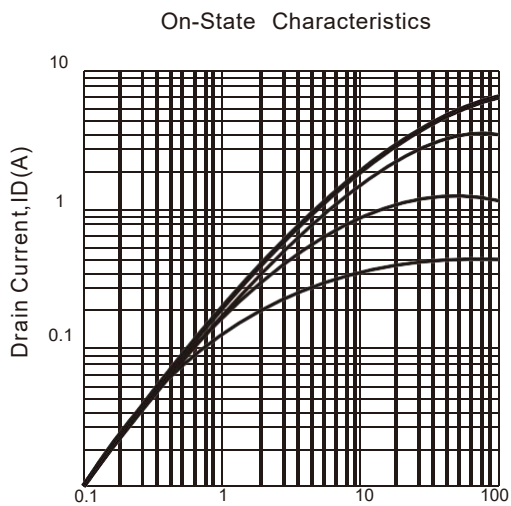
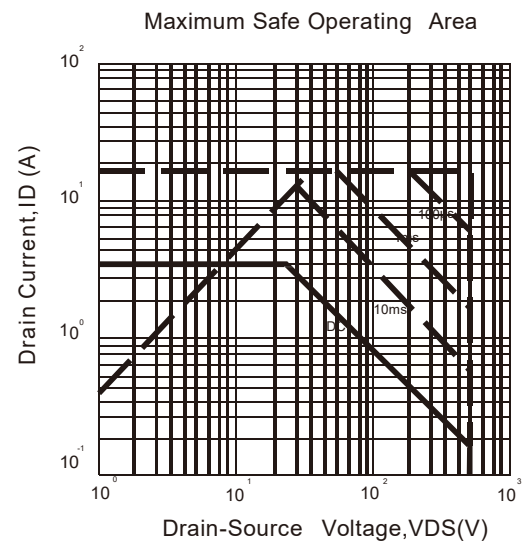
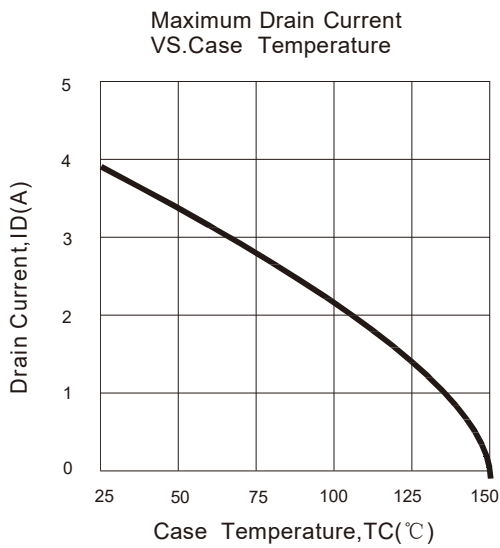
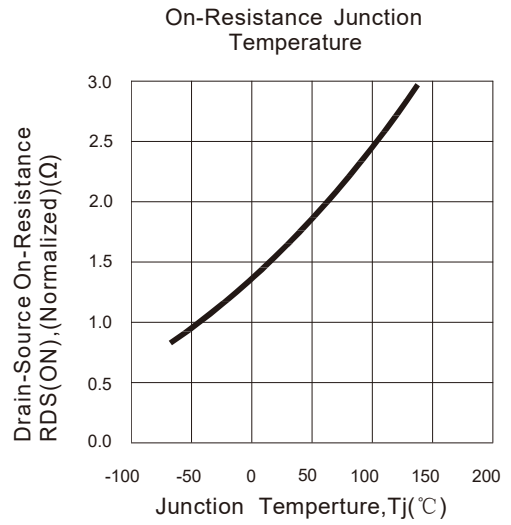
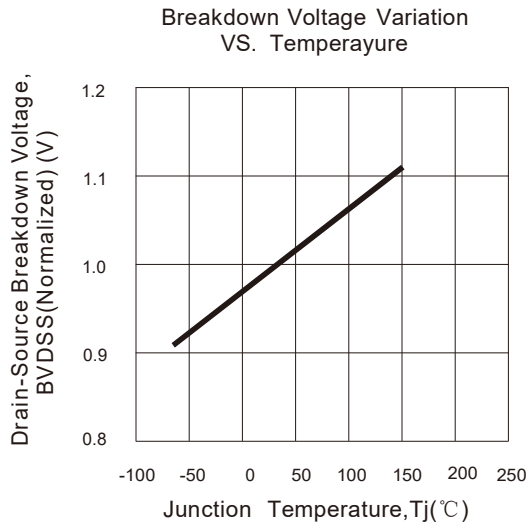
Notes : 1, L=0.5mH, I_{AS}= 5A, V_{DD}=50V, R_G=25Ω, Starting T_J =25°C

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

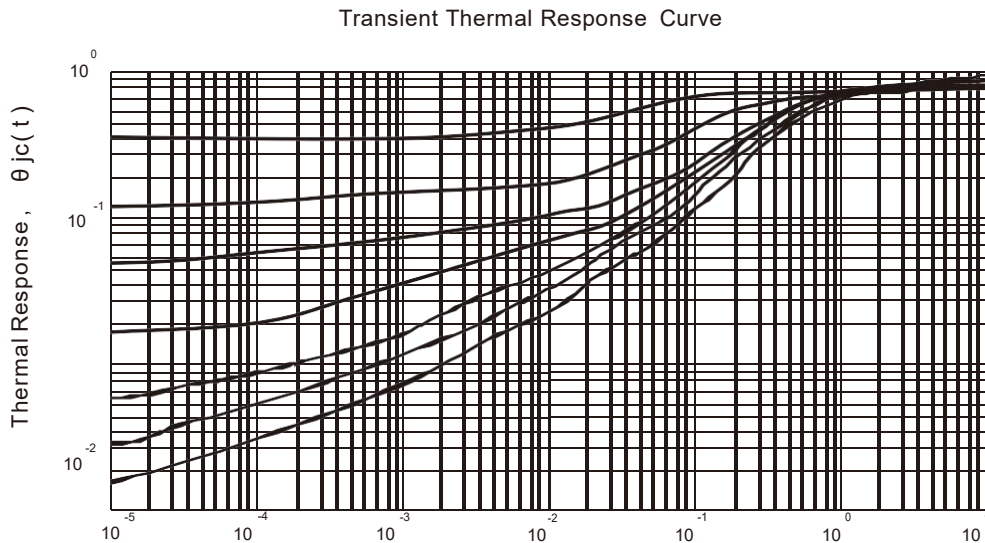
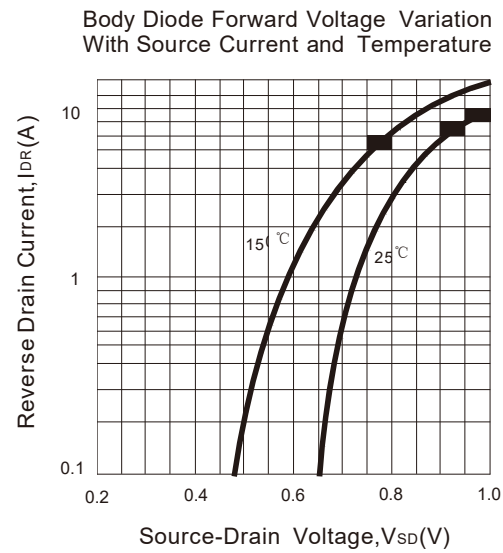
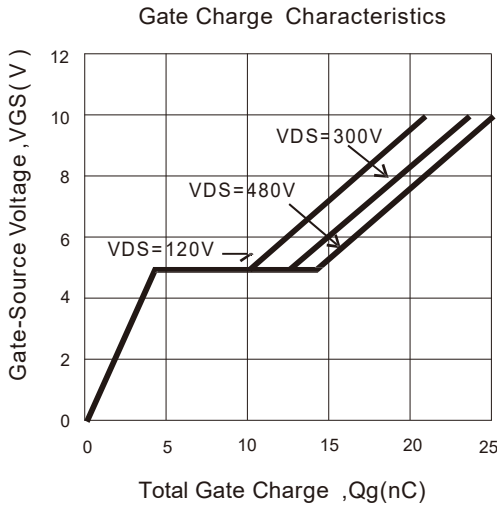
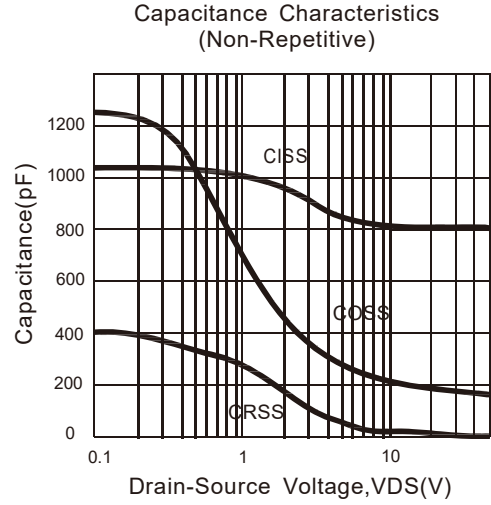
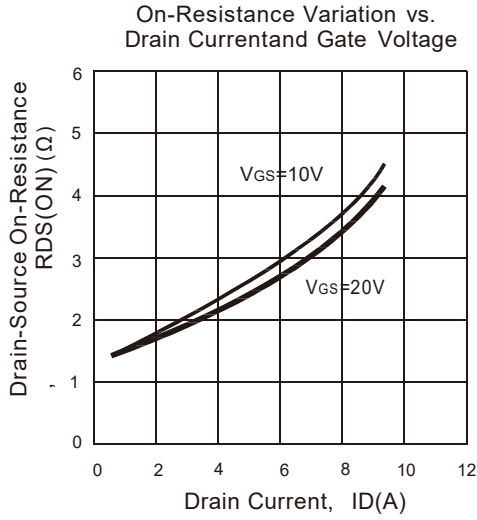
3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

4, Essentially Independent of Operating Temperature

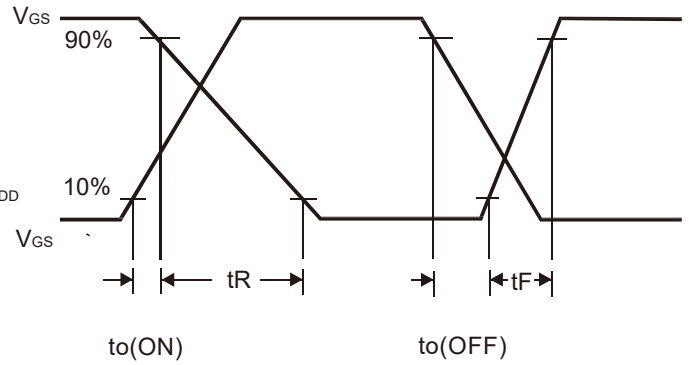
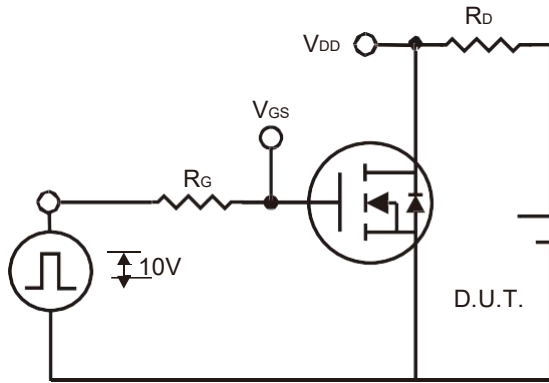
Typical Characteristics



Typical Characteristics (Continued)

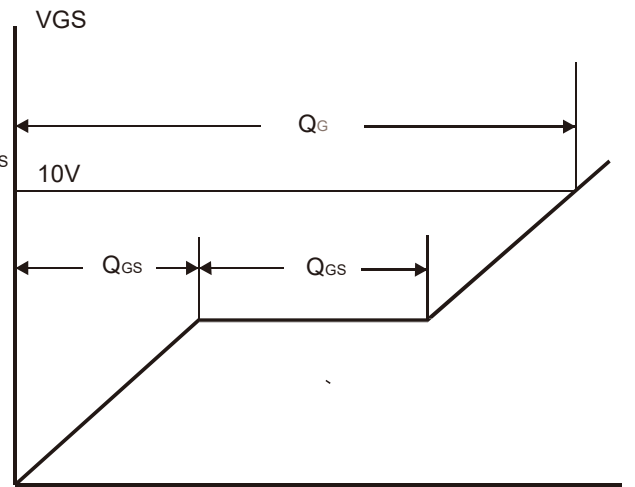
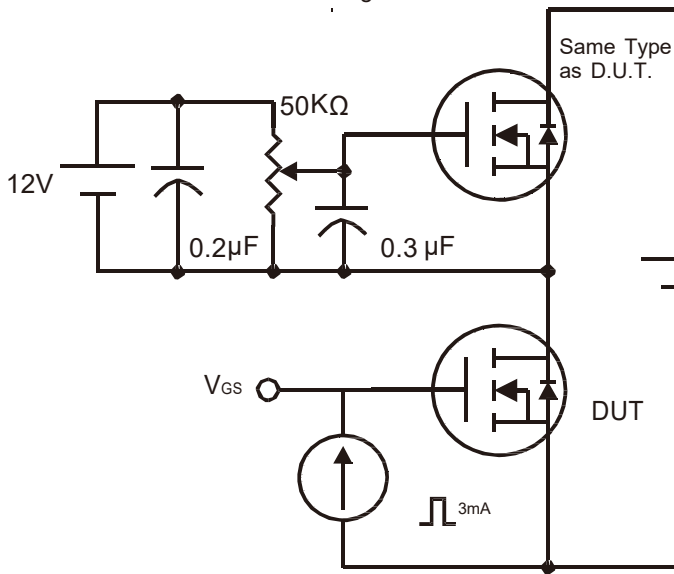


Gate Charge Test Circuit & Waveform



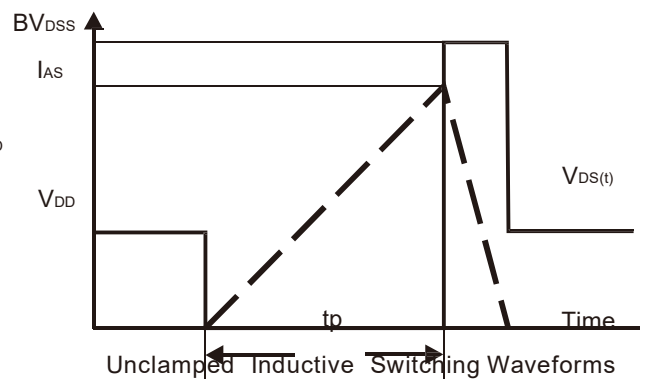
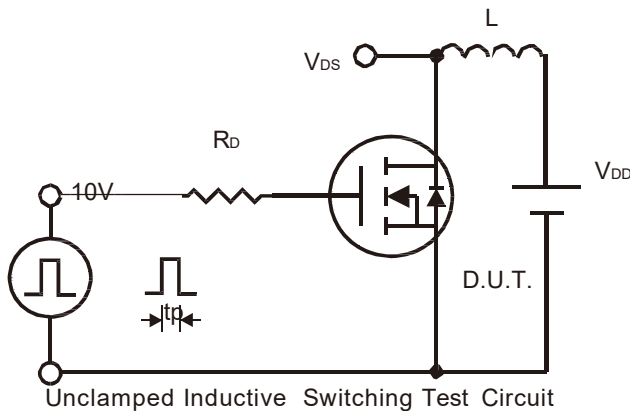
Switching Test Circuit

Switching Waveforms



Gate Charge Test Circuit

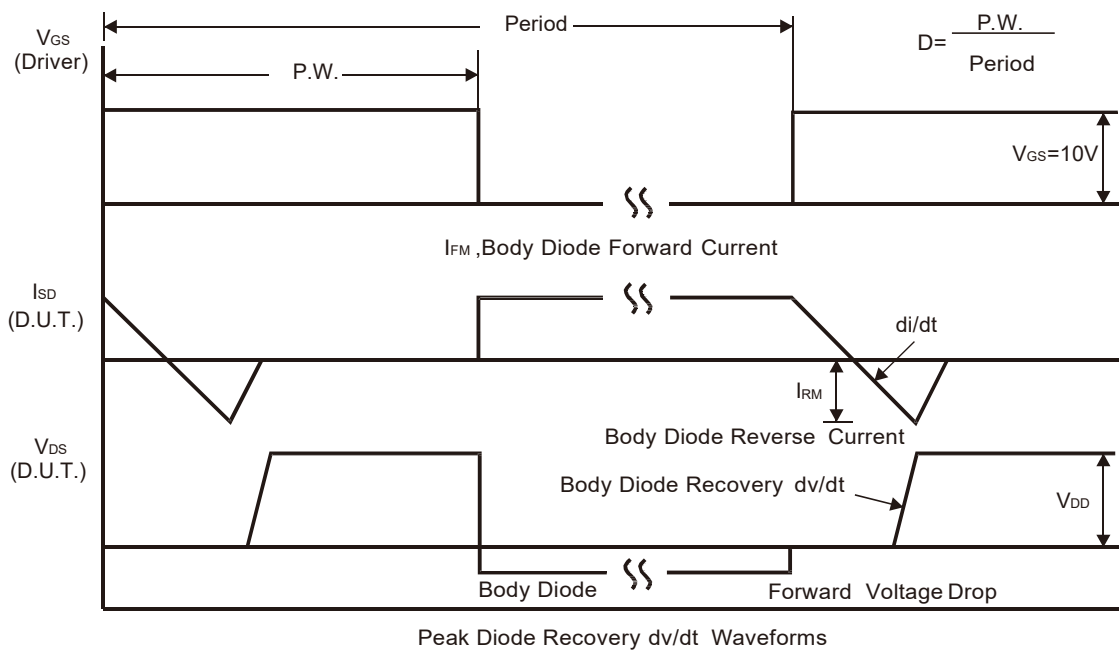
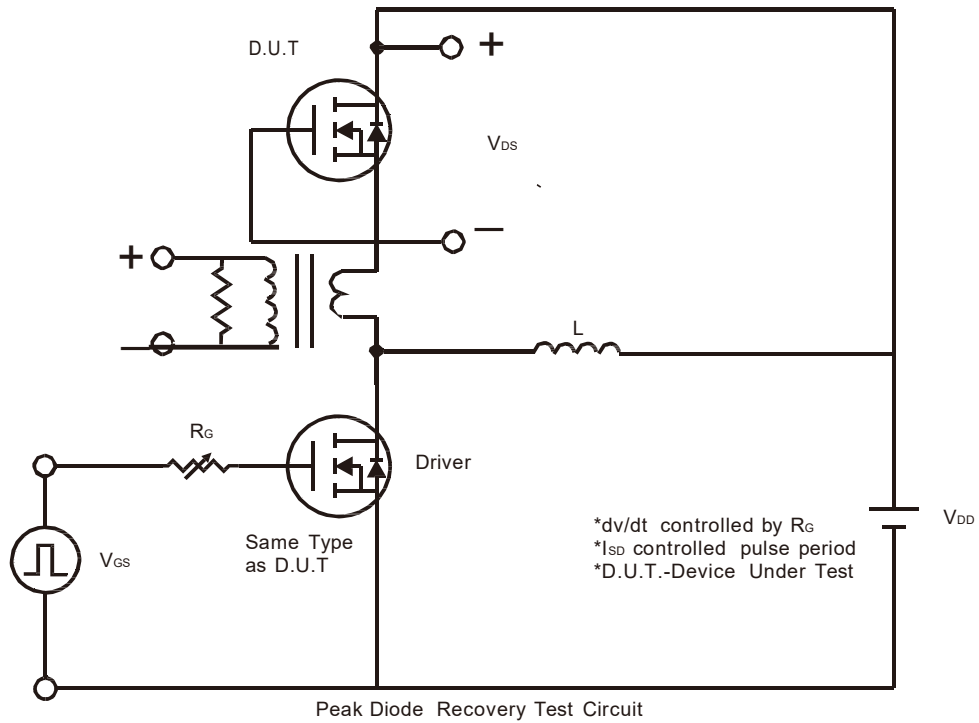
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

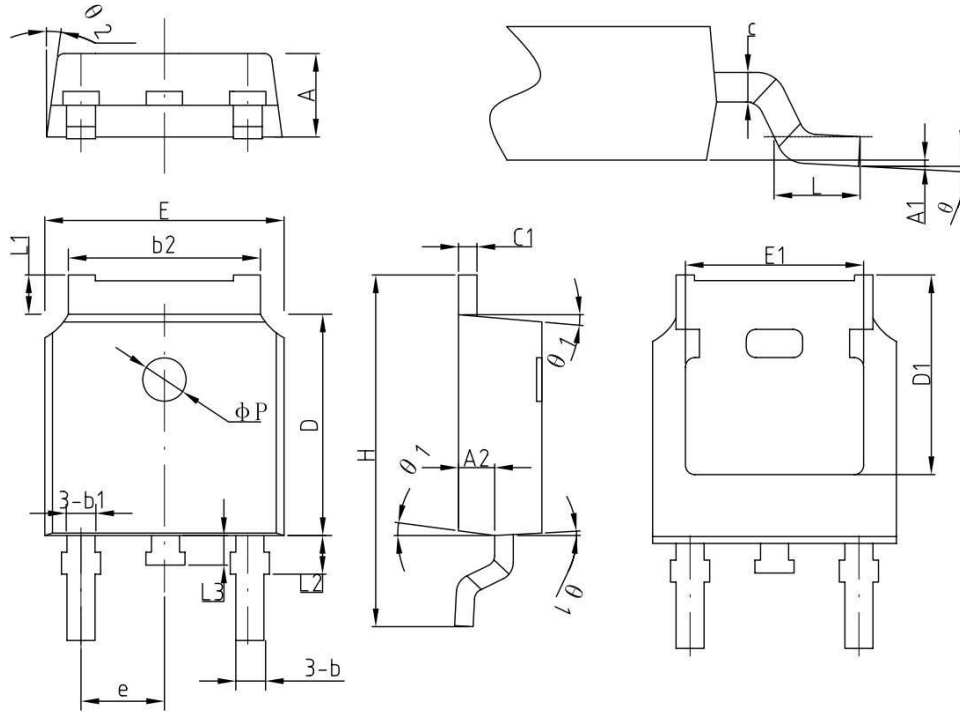
Peak Diode Recovery dv/dt Test Circuit & Waveform



Package Dimension

TO-252

Unit: mm


 COMMON DIMENSIONS
 (UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.2	2.30	2.38
A1	0	—	0.10
A2	0.90	1.01	1.10
b	0.71	0.76	0.86
b1		0.76	
b2	5.13	5.33	5.46
c	0.47	0.50	0.60
c1	0.47	0.50	0.60
D	6.0	6.10	6.20
D1	—	5.30	—
E	6.50	6.60	6.70
E1	—	4.80	—
e	2.286BSC		
H	9.70	10.10	10.40
L	1.40	1.50	1.70
L1	0.90	—	1.25
L2		1.05	
L3		0.8	
ϕP		1.2	
θ	0°	—	8°
θ_1	5°	7°	9°
θ_2	5°	7°	9°