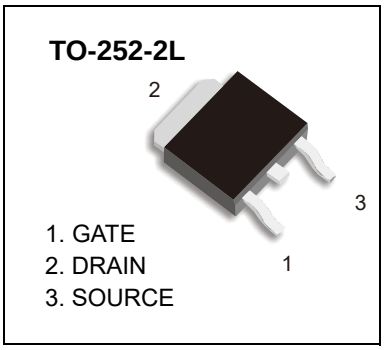
TO-252-2L Plastic-Encapsulate MOSFETS

N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
650V	1.35Ω@10V	7A



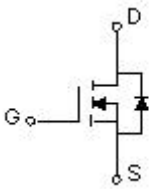
GENERAL DESCRIPTION

The 7N65 is an N-channel mode power MOSFET using advanced technology to provide costomers with planar stripe. This technology specializes in allowing a minimum on-state resistance and superior switching performance. It also can withstand high energy pulse in the avalanche and commutation mode. The 7N65 is universally applied in high efficiency switch mode power supply.

FEATURE

- Excellent package for good heat dissipation
- High switching speed
- 100% avalanche tested

EQUIVALENT CIRCUIT



APPLICATION

- Power switching application
- DC/DC converters

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

Sy mbol	Parameter		Value	Unit
V_{DSS}	Drain-Source Voltage		650	V
I_D	Drain Current	T_j=25℃	7.0	A
		T_j=100℃	4.7	
V_{GSS}	Gate-Source Voltage		± 30	V
E_{AS}	Single Pulse Avalanche Energy (note1)		300	mJ
I_{AR}	Avalanche Current (note2)		7.0	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

Sy mbol	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

Typical Characteristics

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=250μA , V_{GS} =0	650	-	-	V
△BVDSS/ △TJ	Breakdown Voltage Temperature Coefficient	I_D=250μA ,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=3.5A,V_{GS} =10V	-	1.25	1.35	Ω
Dynamic Characteristics						
Ciss	Input Capacitance	V_{DS}=25V , V_{GS} =0 , f=1.0MHz	-	1000	-	pF
Coss	Output Capacitance		-	95	-	
Crss	Reverse Transfer Capacitance		-	2.4	-	
Sw itching Characteristics						
Td(on)	Turn-On Delay Time	V_{DD}=325V , I_D=7A R_G =25Ω (Note 3,4)	-	30	70	nS
Tr	Turn-On Rise Time		-	80	170	
Td(of f)	Turn-Off Delay Time		-	65	140	
Tf	Turn-Off Rise Time		-	60	130	
Qg	Total Gate Charge	V_{DS}=520V,V_{GS} =10V , I_D=7A (Note3,4)	-	29	38	nC
Qgs	Gate-Source Charge			7	-	
Qgd	Gate-Drain Charge		-	14.5	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Is	Max. Diode Forward Current	-		- -	7	A
I_{SM}	Max. Pulsed Forward Current	-		- -	28	
V_{SD}	Diode Forward Voltage	I_D=7A	-	-	1.4	V
Trr	Reverse Recovery Time	Is=7A,V_{GS} =0V diF/dt=100A/ μs (Note3)	-	293	-	nS
Qrr	Reverse Recovery Charge		-	1.7	-	μC

Notes : 1, L=0.5mH, IAS= 7A, 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

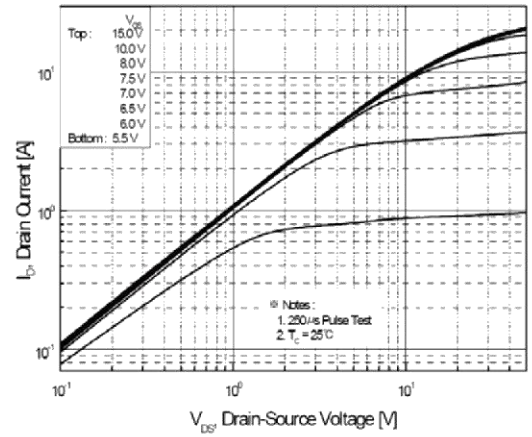


Figure 1. On-Region Characteristics

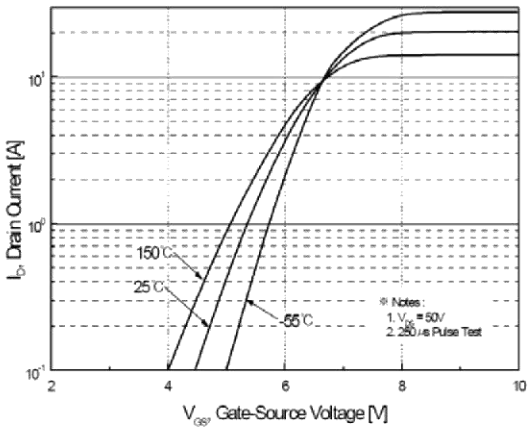


Figure 2. Transfer Characteristics

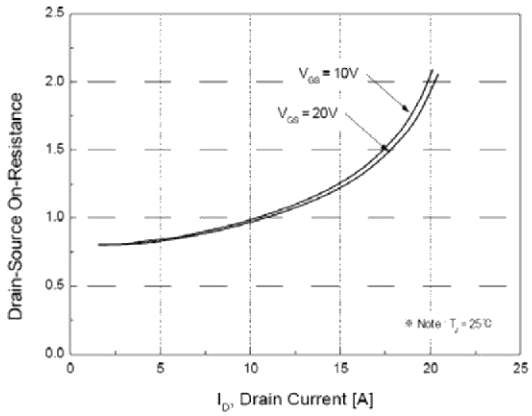


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

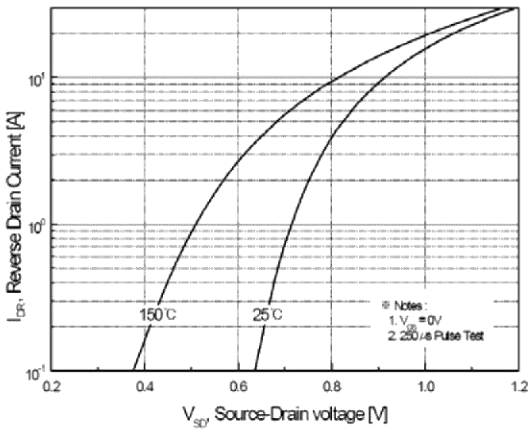


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

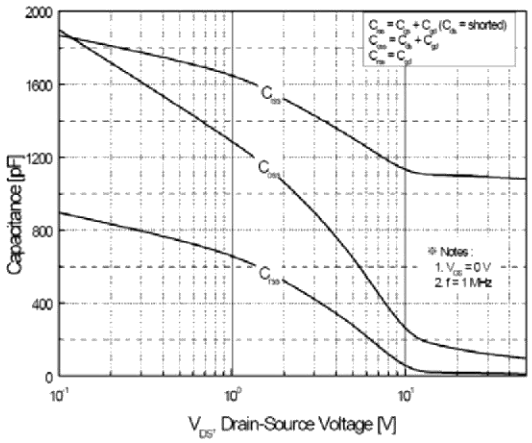


Figure 5. Capacitance Characteristics

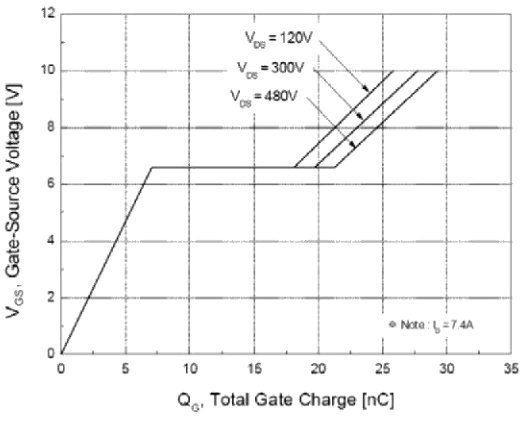


Figure 6. Gate Charge Characteristics

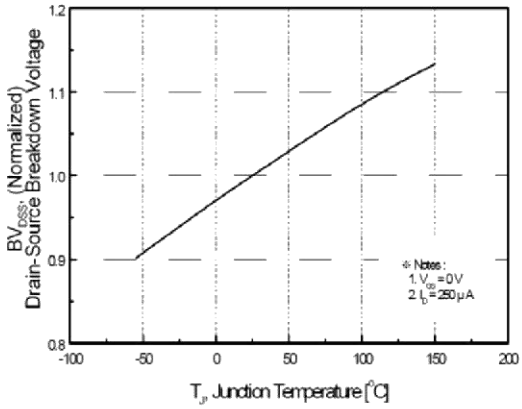


Figure 7. Breakdown Voltage Variation vs Temperature

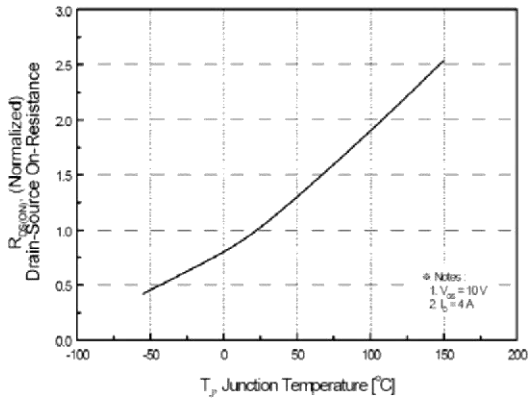


Figure 8. On-Resistance Variation vs Temperature

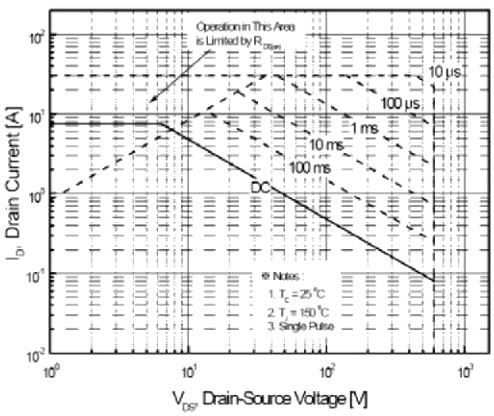


Figure 9-2. Maximum Safe Operating Area

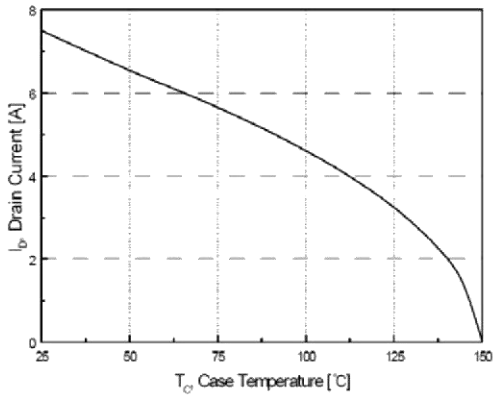


Figure 10. Maximum Drain Current vs Case Temperature

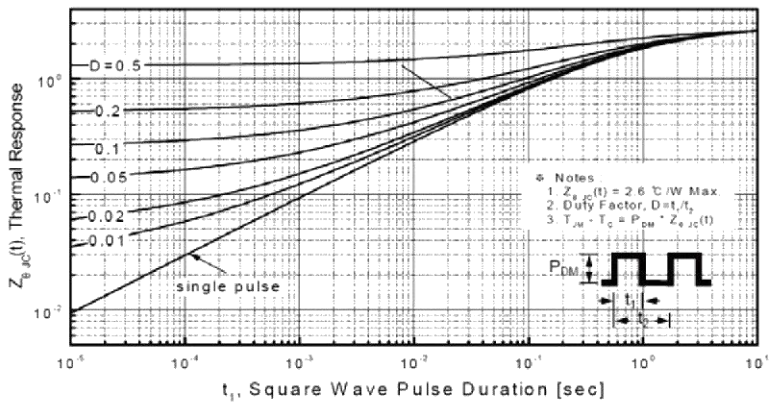
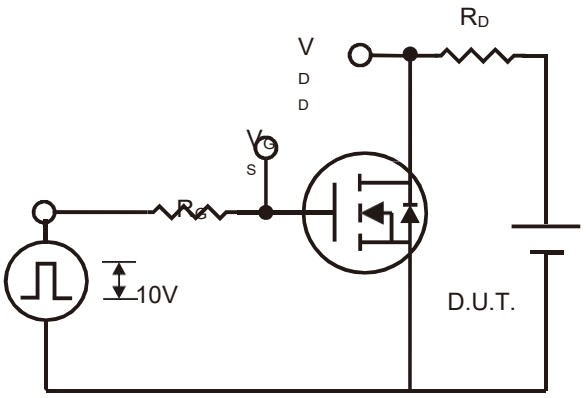
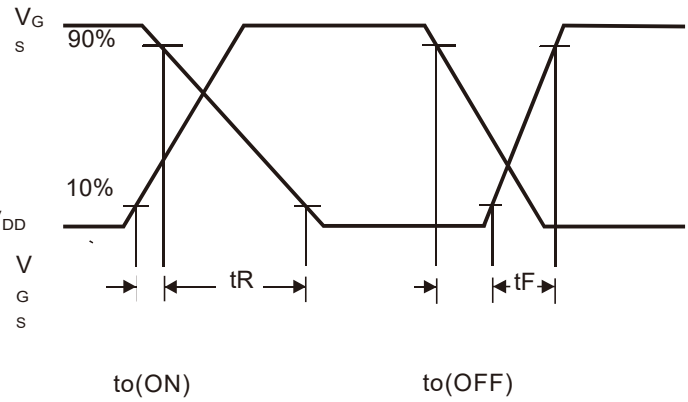


Figure 11-2. Transient Thermal Response Curve

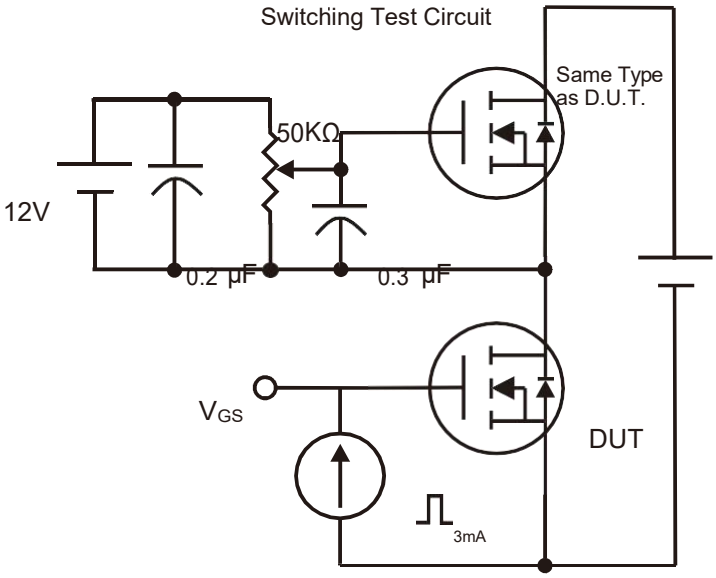
Gate Charge Test Circuit & Waveform

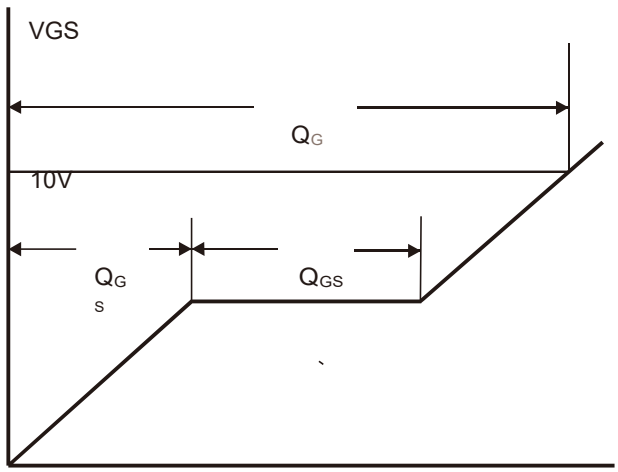




Switching Test Circuit

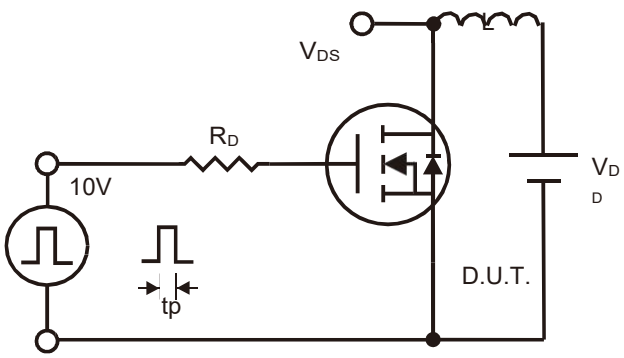
Switching Waveforms

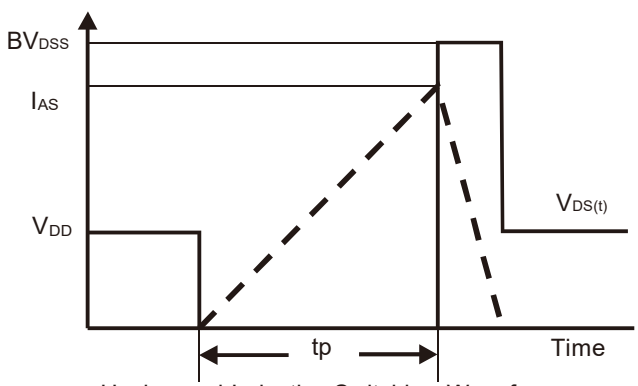




Gate Charge Test Circuit

Gate Charge Waveform

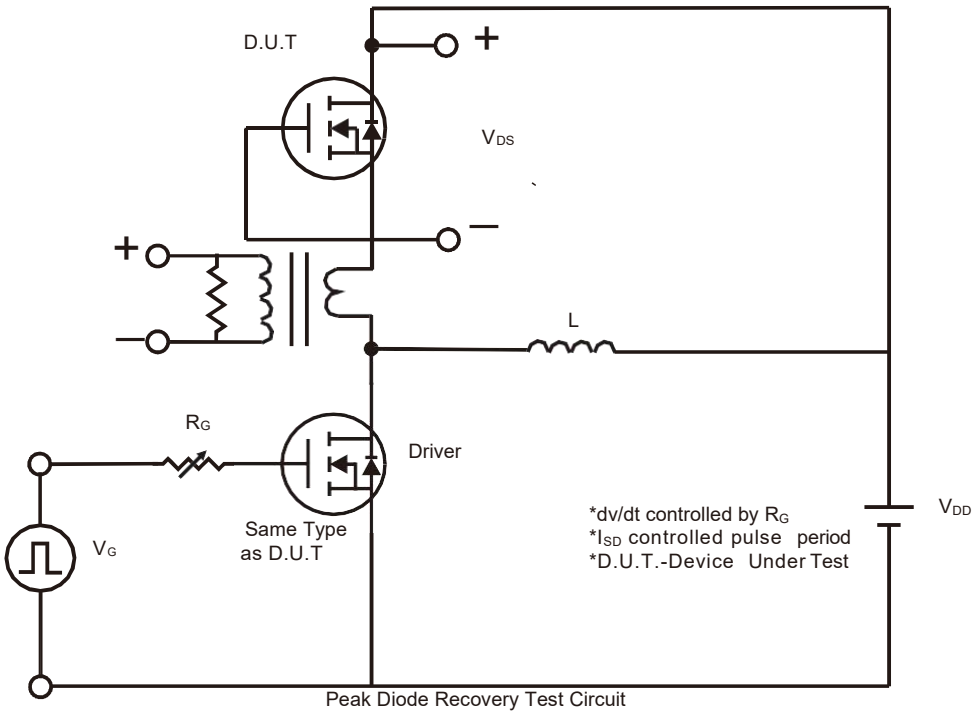




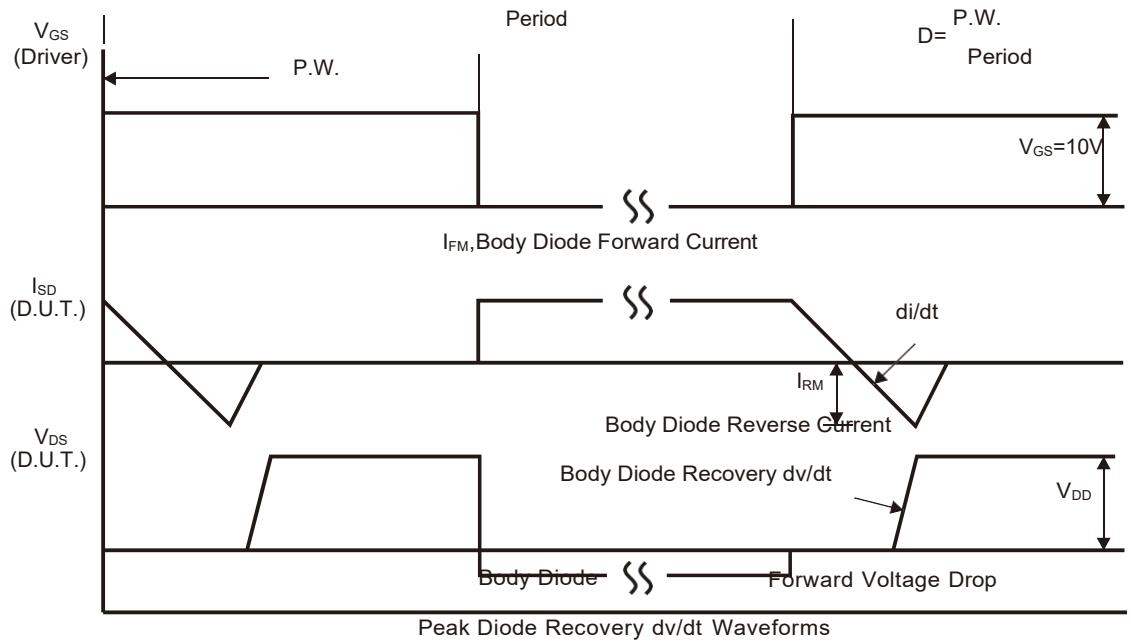
Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

Peak Diode Recovery dv/dt Test Circuit & Waveform

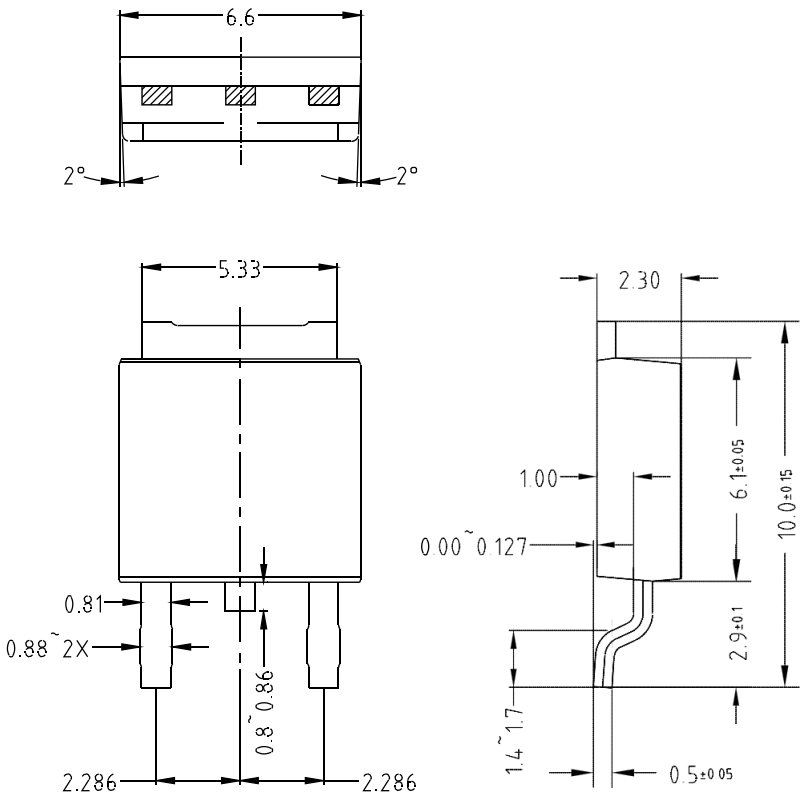


Peak Diode Recovery Test Circuit

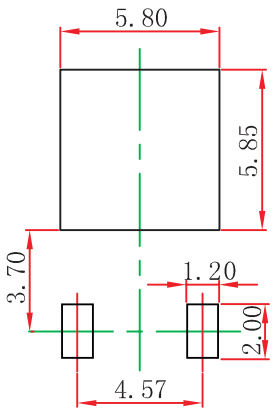


Peak Diode Recovery dv/dt Waveforms

TO-252-2L Package Outline Dimensions



TO-252-2L Suggested Pad Layout

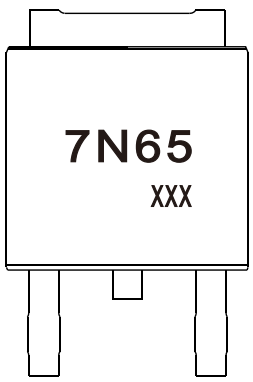


Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

Ordering Information

Part Number	Package	Shipping Quantity
7N65	TO-252-2L	2500/tape&Reel

Marking Diagram



XXX =Date Code