

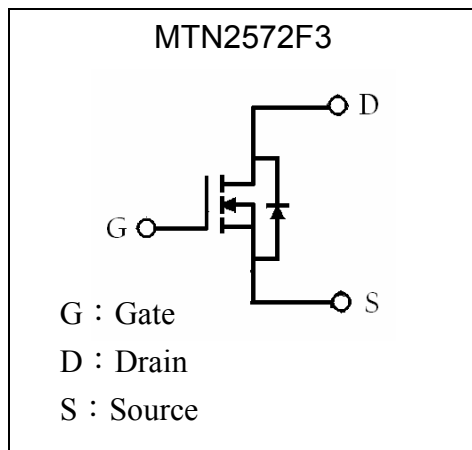
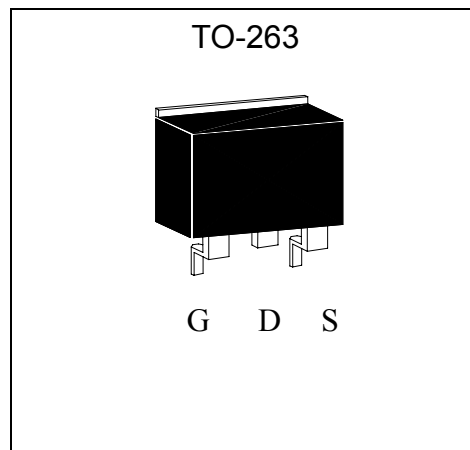
N-Channel Enhancement Mode Power MOSFET

MTN2572F3

BV_{DSS}	150V
I_D	48A
$R_{DS(ON)}$	50m Ω

Features

- Low Gate Charge
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package

Symbol

Outline

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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 30	
Continuous Drain Current @ $V_{GS}=10\text{V}$, $T_C=25^\circ\text{C}$	I_D	48	A
Continuous Drain Current @ $V_{GS}=10\text{V}$, $T_C=100^\circ\text{C}$	I_D	30	
Pulsed Drain Current (Note 1)	I_{DM}	140	
Avalanche Current	I_{AS}	18	
Avalanche Energy @ $L=0.2\text{mH}$, $I_D=18\text{A}$, $R_G=25\Omega$	E_{AS}	32.4	mJ
Repetitive Avalanche Energy @ $L=0.1\text{mH}$ (Note 2)	E_{AR}	16.2	
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
Operating Junction and Storage Temperature	T_j, T_{stg}	-55~+175	$^\circ\text{C}$

Note : 1. Pulse width limited by maximum junction temperature
2. Duty cycle $\leq 1\%$

**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	1.2	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	62.5	°C/W

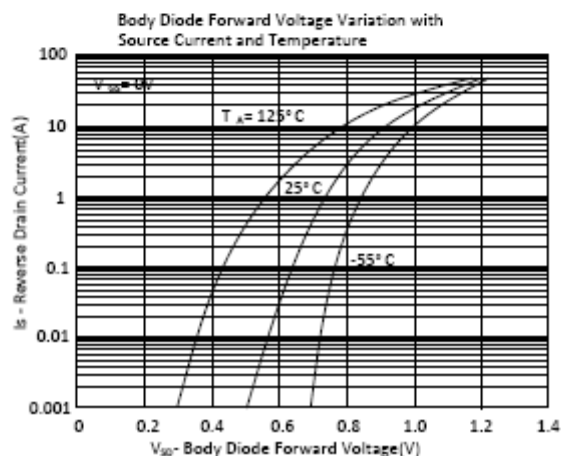
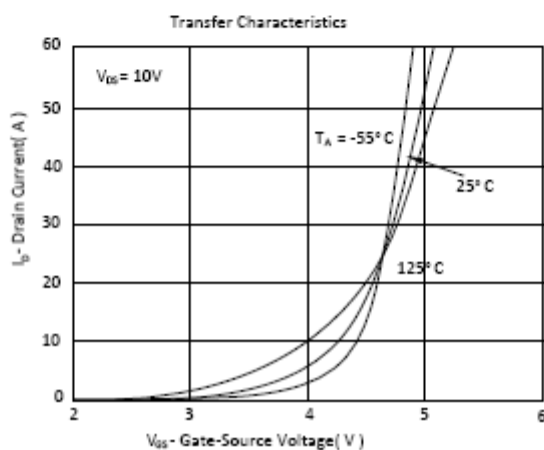
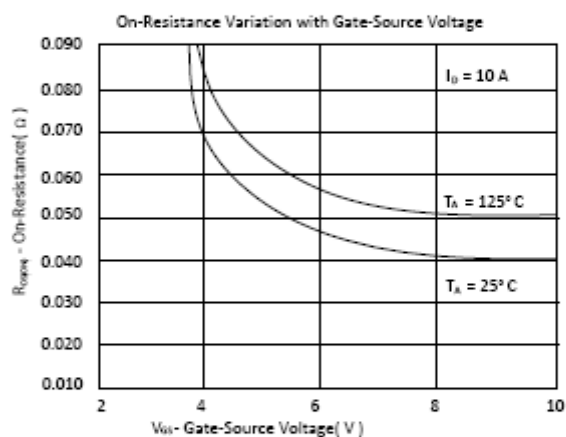
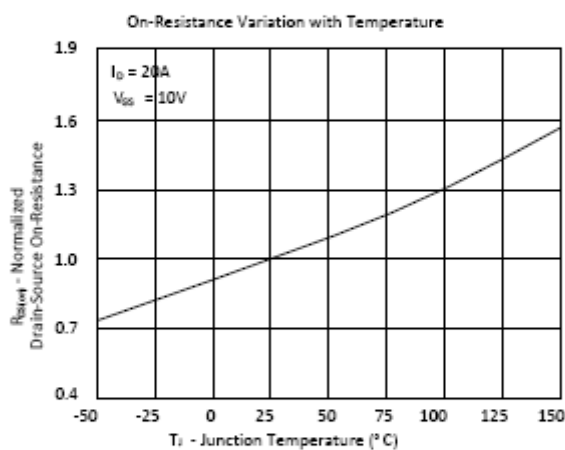
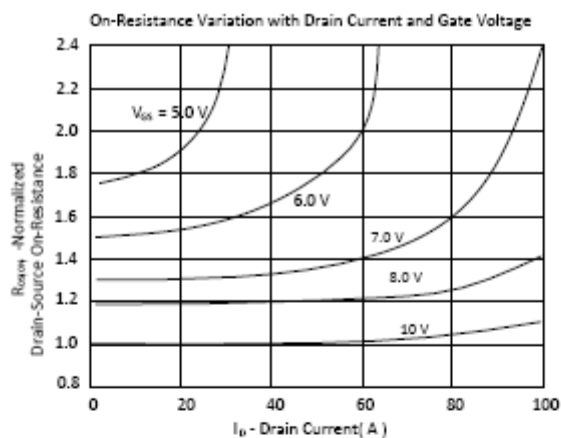
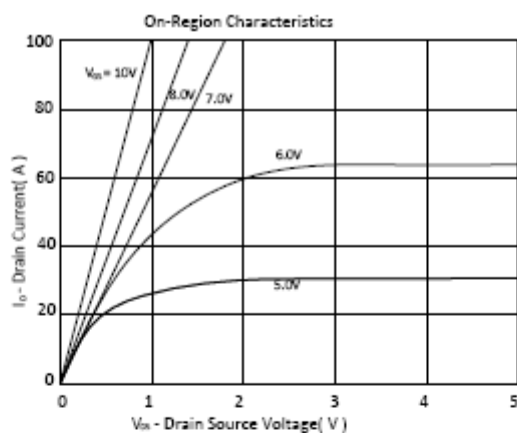
Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	150	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	1.5	2.5	4.0	V	$V_{DS} = V_{GS}, I_D=250\mu A$
G_{FS}	-	40	-	S	$V_{DS} = 5V, I_D=20A$
I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 30$
I_{DSS}	-	-	1	μA	$V_{DS} = 120V, V_{GS} = 0V$
	-	-	25	μA	$V_{DS} = 100V, V_{GS} = 0V, T_j=125^\circ C$
$*R_{DS(ON)}$	-	40	50	m Ω	$V_{GS} = 10V, I_D=20A$
$*I_{D(ON)}$	48	-	-	A	$V_{DS} = 10V, V_{GS} = 10V$
Dynamic					
$*Q_g$	-	30	-	nC	$I_D=20A, V_{DS}=80V, V_{GS}=10V$
$*Q_{gs}$	-	10	-		
$*Q_{gd}$	-	8	-		
$*t_{d(ON)}$	-	20	-	ns	$V_{DS}=75V, I_D=1A, V_{GS}=10V,$ $R_G=6\Omega$
$*t_r$	-	18	-		
$*t_{d(OFF)}$	-	40	-		
$*t_f$	-	18	-		
C_{iss}	-	1963	-	pF	$V_{GS}=0V, V_{DS}=25V, f=1MHz$
C_{oss}	-	195	-		
C_{rss}	-	65	-		
R_g	-	2	-	Ω	$V_{GS}=15mV, V_{DS}=0V, f=1MHz$
Source-Drain Diode					
$*I_S$	-	-	48	A	
$*I_{SM}$	-	-	140		
$*V_{SD}$	-	-	1.3	V	$I_F=I_S, V_{GS}=0V$
$*t_{rr}$	-	120	-	ns	$I_F=25A, V_{GS}=0, dI_F/dt=100A/\mu s$
$*Q_{rr}$	-	380	-	nC	

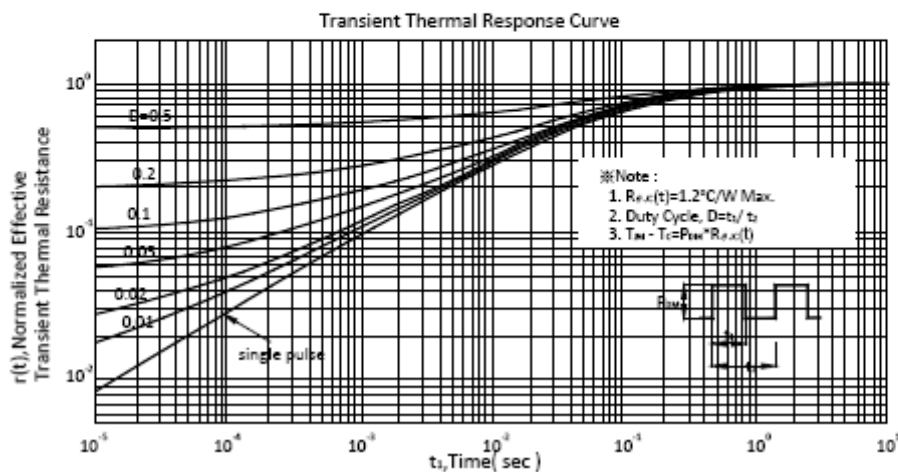
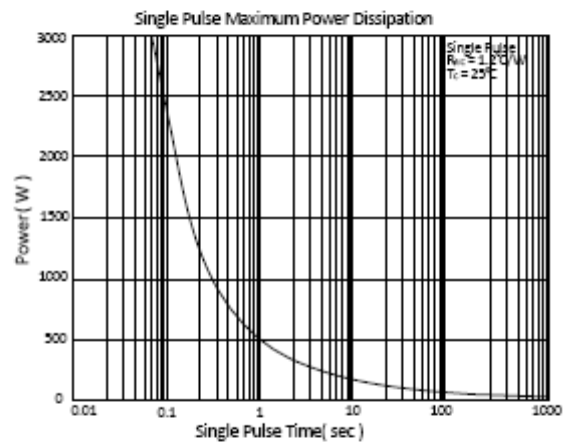
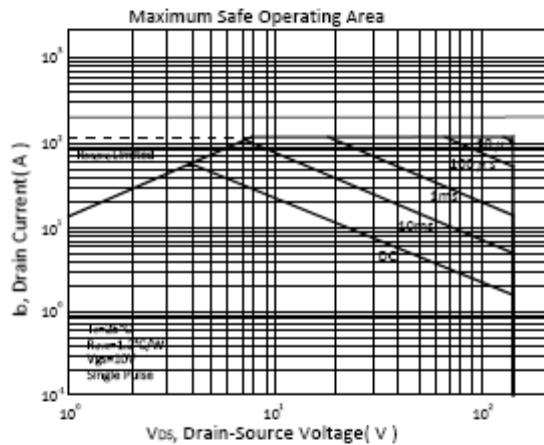
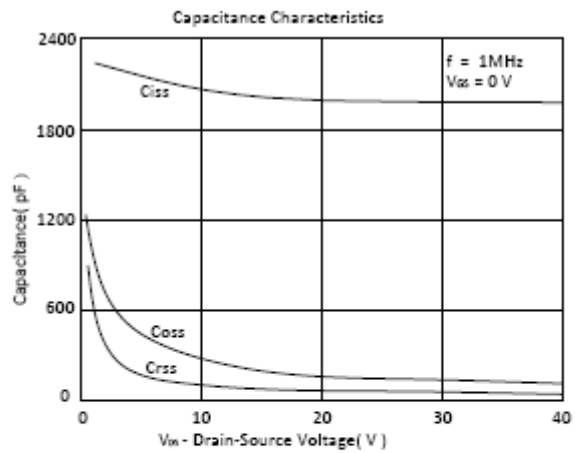
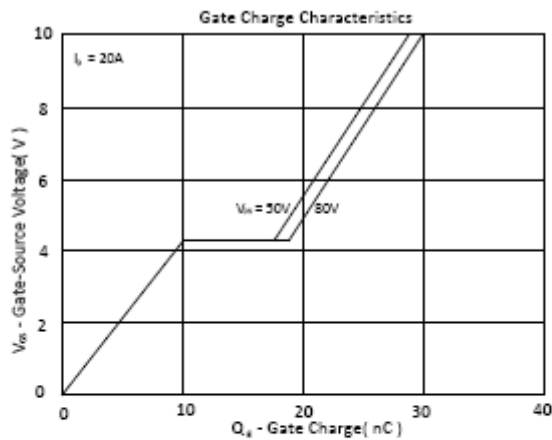
*Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$ **Ordering Information**

Device	Package	Shipping
MTN2572F3	TO-263 (RoHS compliant package)	800 pcs / Tape & Reel

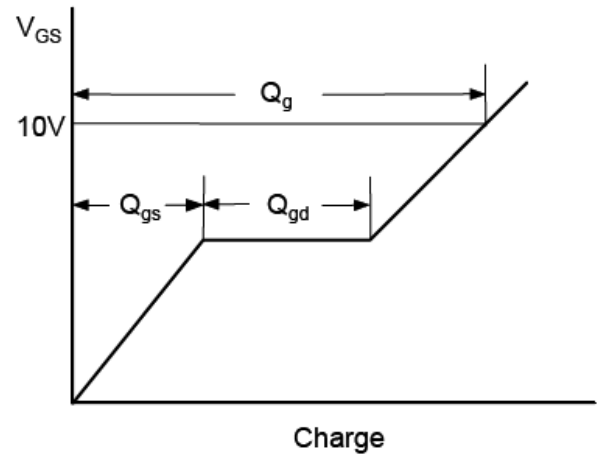
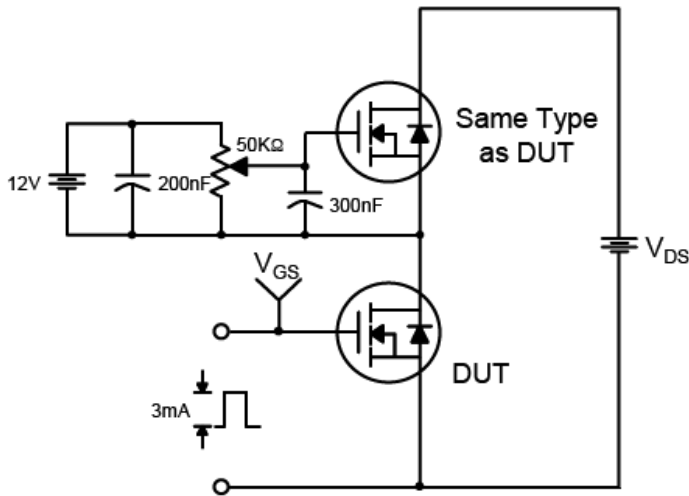
Characteristic Curves



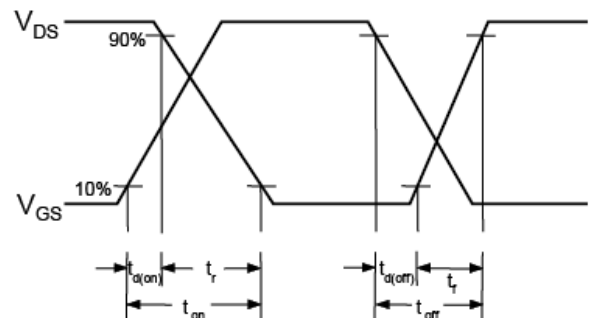
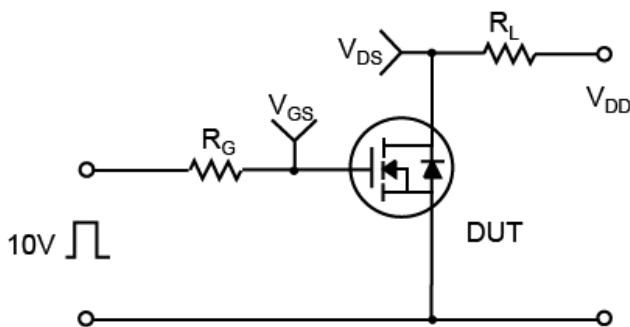
Characteristic Curves(Cont.)



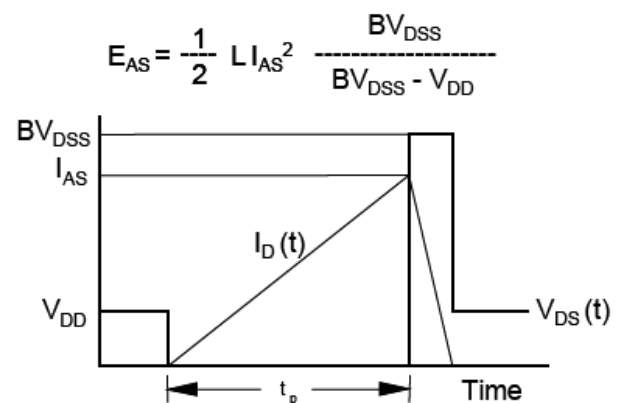
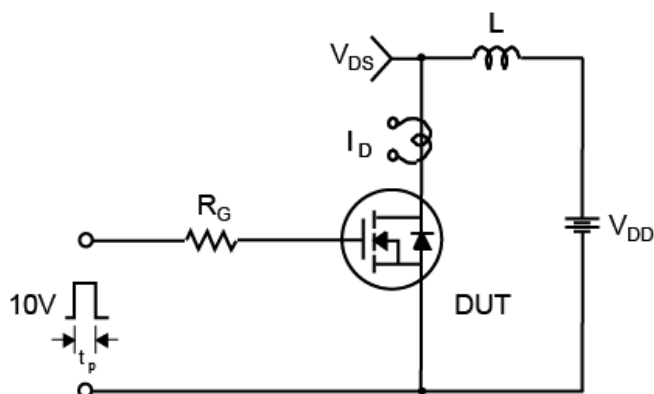
Test Circuit and Waveforms



Resistive Switching Test Circuit & Waveforms

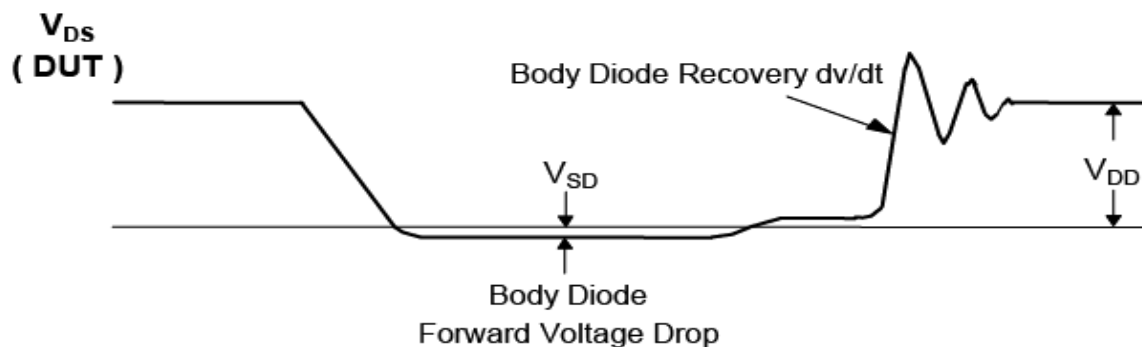
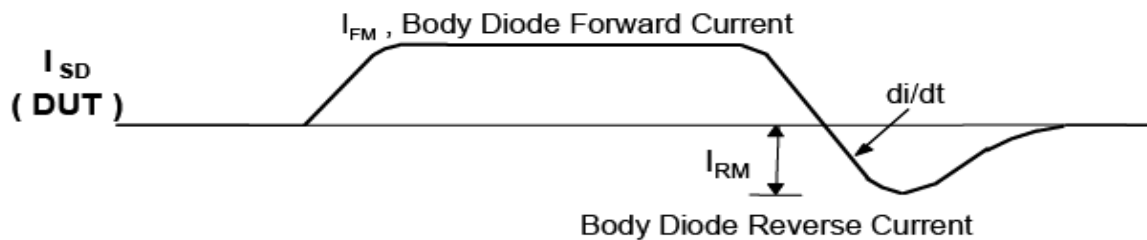
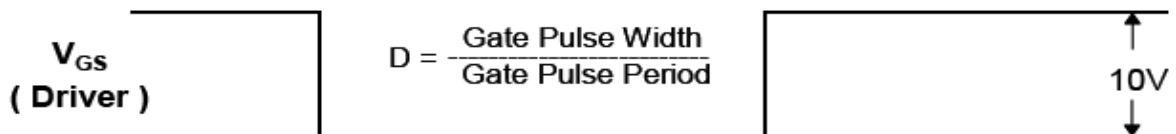
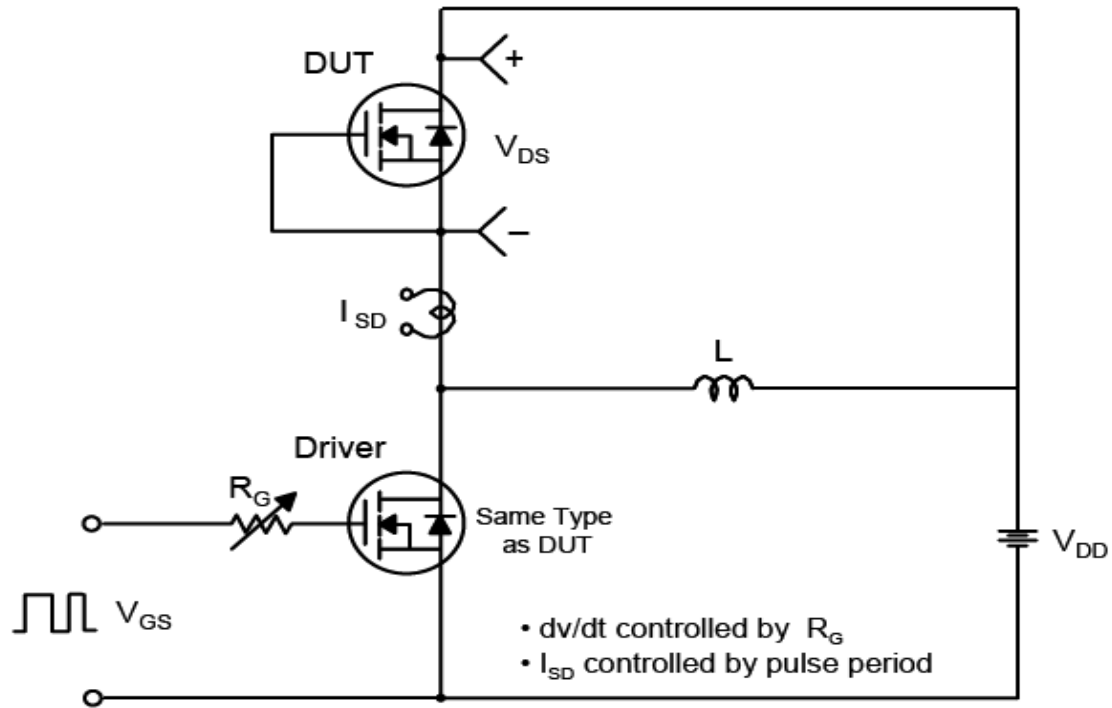


Unclamped Inductive Switching Test Circuit & Waveforms

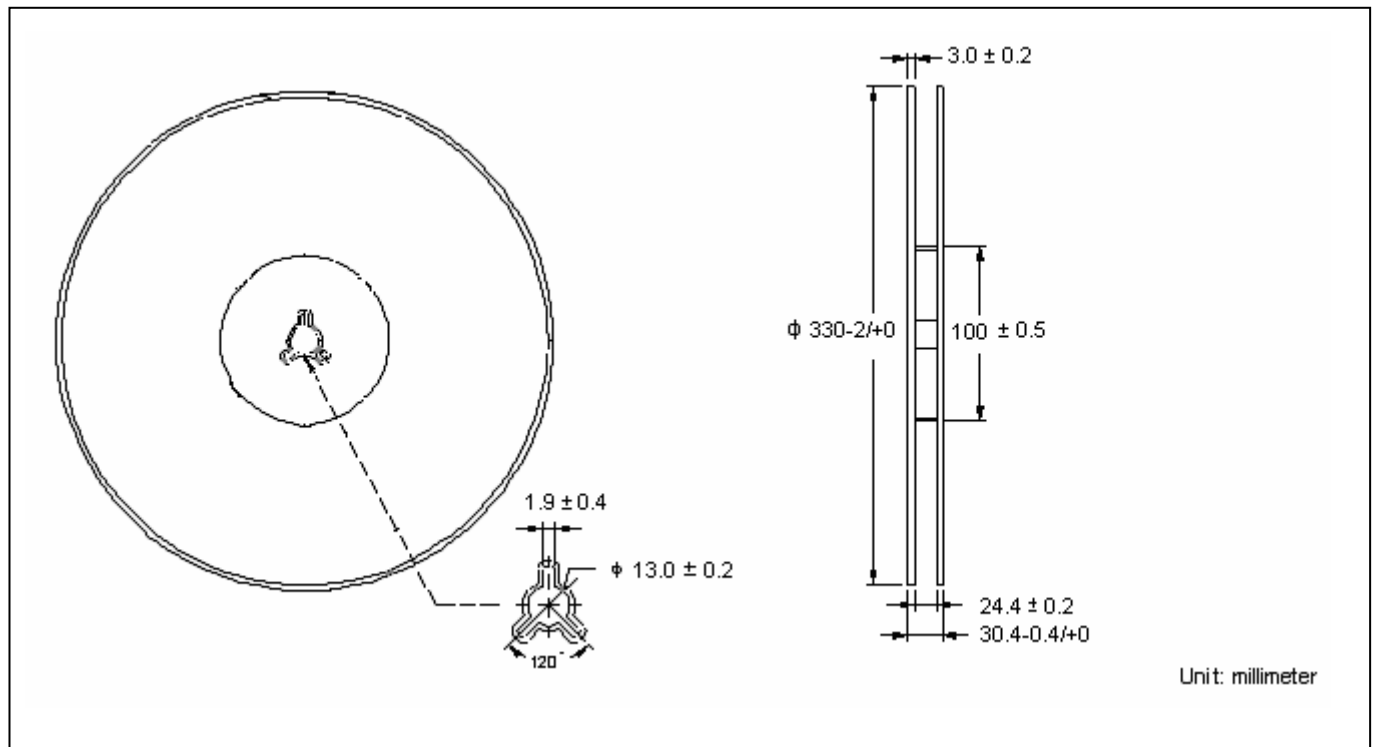


Test Circuit and Waveforms(Cont.)

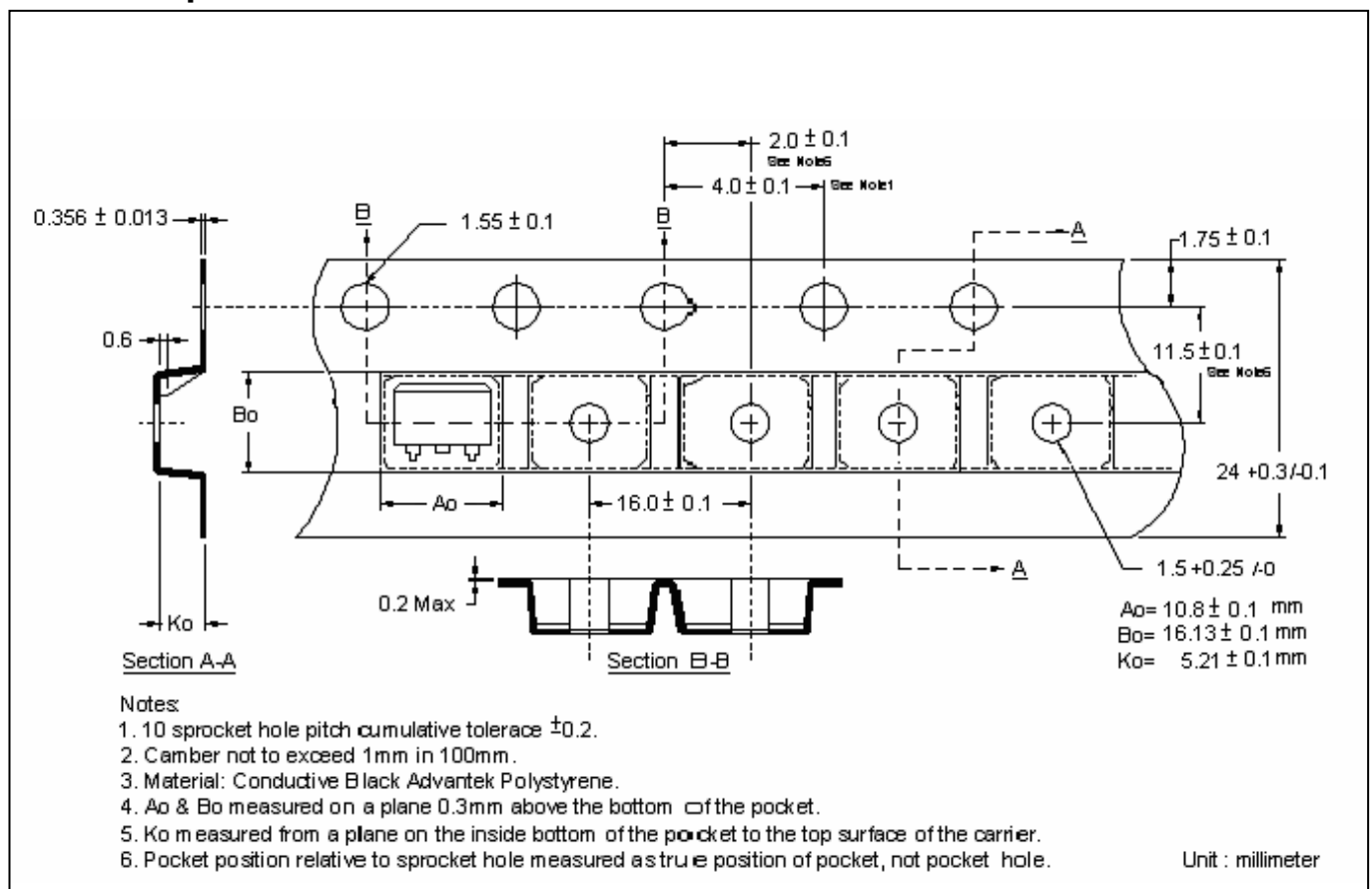
Peak Diode Recovery dv/dt Test Circuit & Waveforms



Reel Dimension



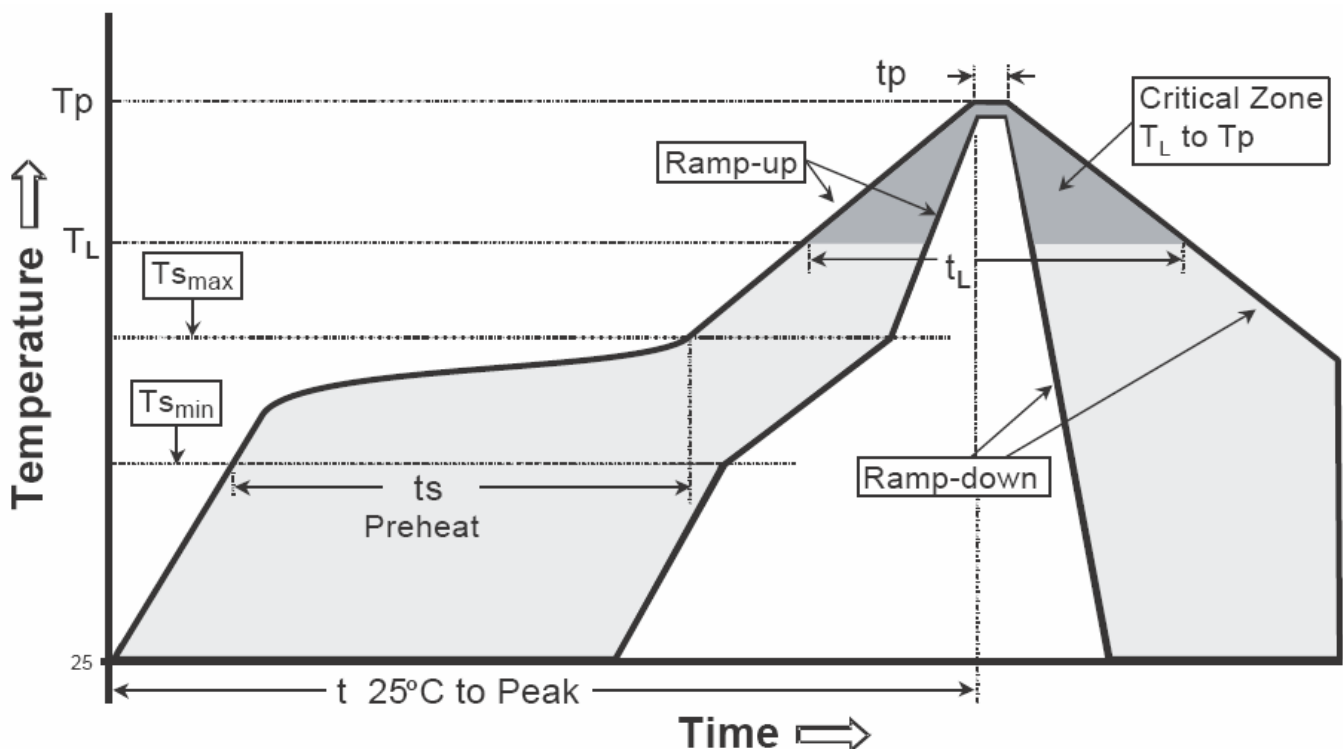
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

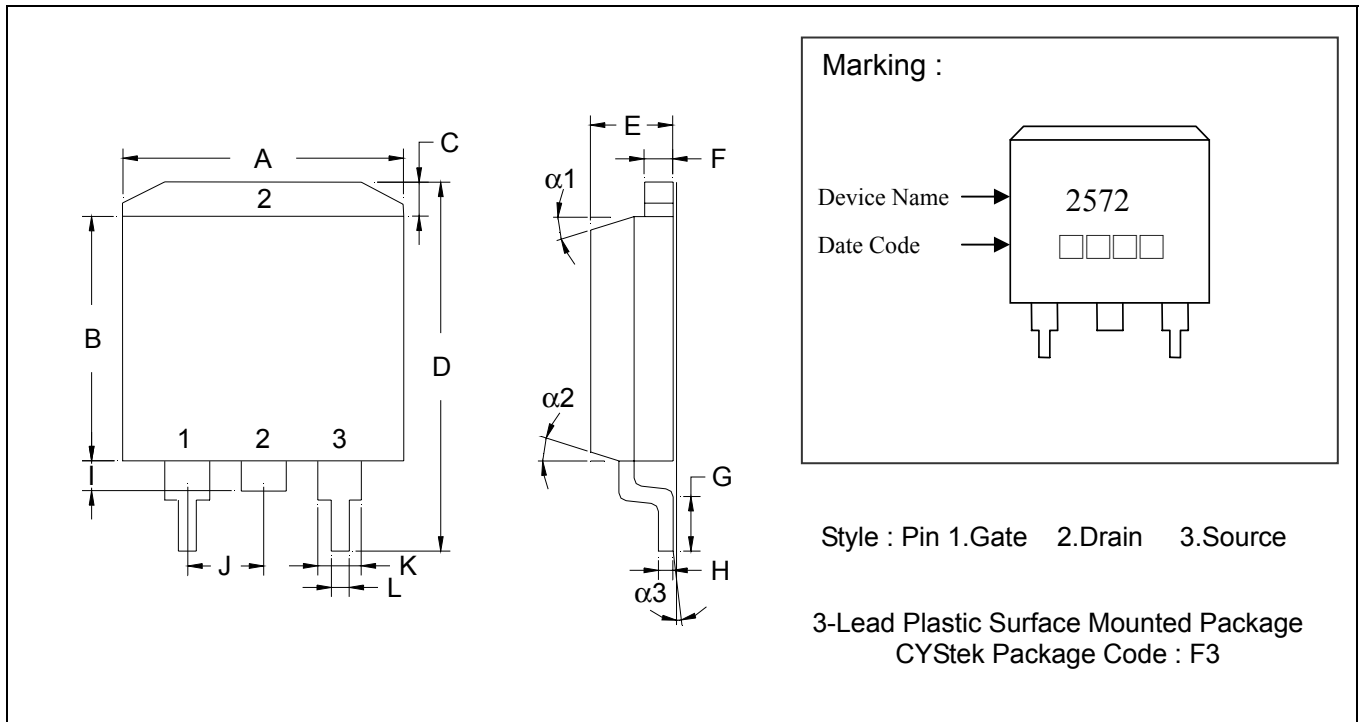
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-263 Dimension



*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.3800	0.4050	9.65	10.29	I	0.0500	0.0700	1.27	1.78
B	0.3300	0.3700	8.38	9.40	J	-	*0.1000	-	*2.54
C	-	0.0550	-	1.40	K	0.0450	0.0550	1.14	1.40
D	0.5750	0.6250	14.61	15.88	L	0.0200	0.0390	0.51	0.99
E	0.1600	0.1900	4.06	4.83	$\alpha 1$	-	-	6°	8°
F	0.0450	0.0550	1.14	1.40	$\alpha 2$	-	-	6°	8°
G	0.0900	0.1100	2.29	2.79	$\alpha 3$	-	-	0°	5°
H	0.0180	0.0290	0.46	0.74					

Notes : 1.Controlling dimension : millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

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