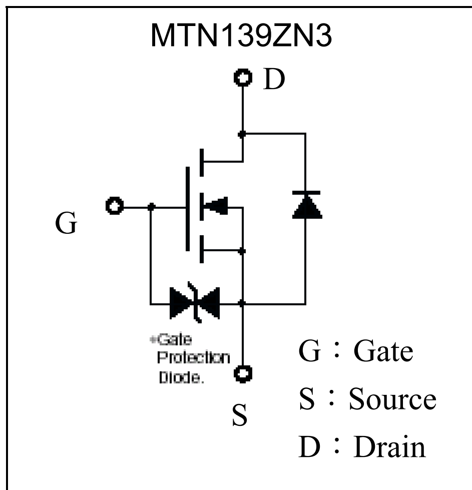
N-Channel Logic Level Enhancement Mode MOSFET

MTN139ZN3

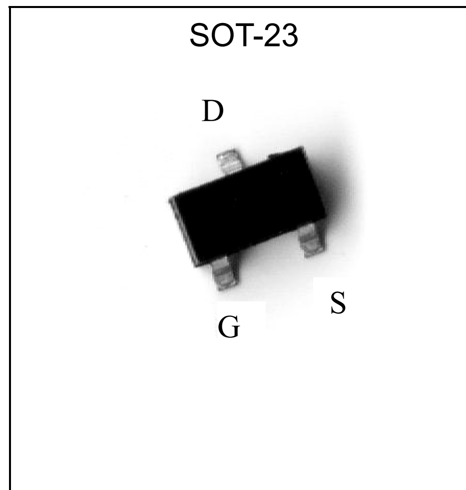
Features

- Low on-resistance
- High ESD
- High speed switching
- Pb-free lead plating and halogen-free package
- Easily designed drive circuits
- Low-voltage drive
- Easy to use in parallel

Symbol



Outline



Ordering Information

Device	Package	Shipping
MTN139ZN3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T1 : 3000 pcs / tape & reel,7” reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	300	mA
	Pulsed	I_{DP}	800 *1	mA
Drain Reverse Current	Continuous	I_{DR}	300	mA
	Pulsed	I_{DRP}	800 *1	mA
Total Power Dissipation		P_D	350 *2	mW
ESD susceptibility			1550 *3	V
Channel Temperature		T_{CH}	+150	°C
Storage Temperature		Tstg	-55~+150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357 *2	°C/W

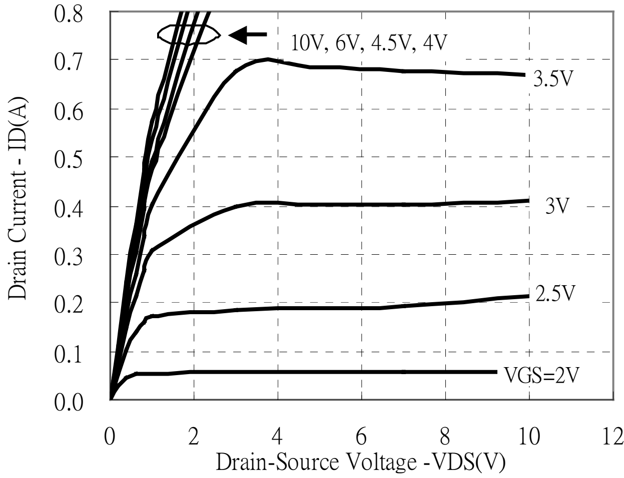
Note : *1. Pulse Width ≤ 300μs, Duty cycle ≤2%
*2. When the device is mounted on a glass epoxy board with area measuring 1x0.75x0.62 inch
*3. Human body model, 1.5kΩ in series with 100pF

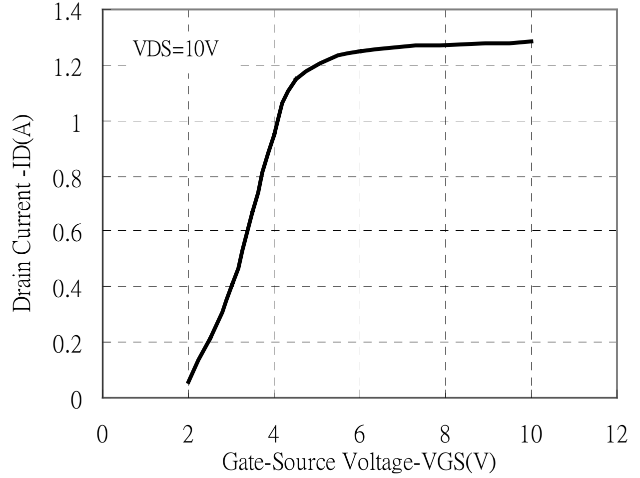
Electrical Characteristics (Ta=25°C)

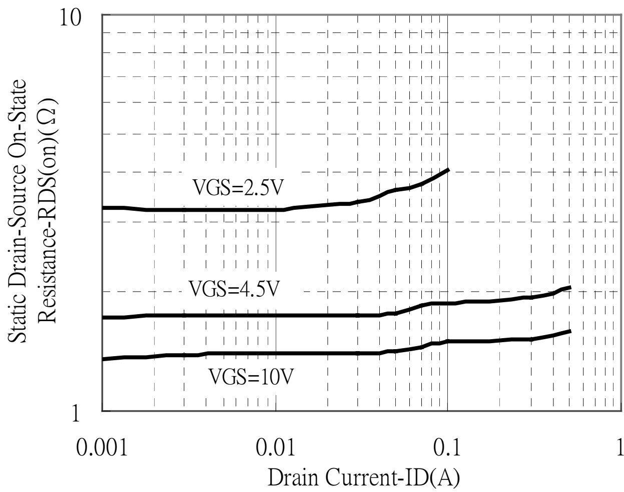
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSS}*	60	-	-	V	V_{GS}=0, I_D=10μA
$V_{GS(th)}$	0.5	1.2	1.5	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±10	μA	V_{GS}=±20V, V_{DS}=0
I_{DSS}	-	-	0.1	μA	V_{DS}=25V, V_{GS}=0
	-	-	0.5		V_{DS}=50V, V_{GS}=0
$R_{DS(ON)}$*	-	1.8	3	Ω	I_D=200mA, V_{GS}=5V
	-	3.1	10		I_D=180mA, V_{GS}=2.75V
G_{FS}	100	-	-	mS	V_{DS}=25V, I_D=200mA
C_{iss}	-	29.3	50	pF	V_{DS}=25V, V_{GS}=0, f=1MHz
C_{oss}	-	4.2	25		
C_{rss}	-	2.8	5		

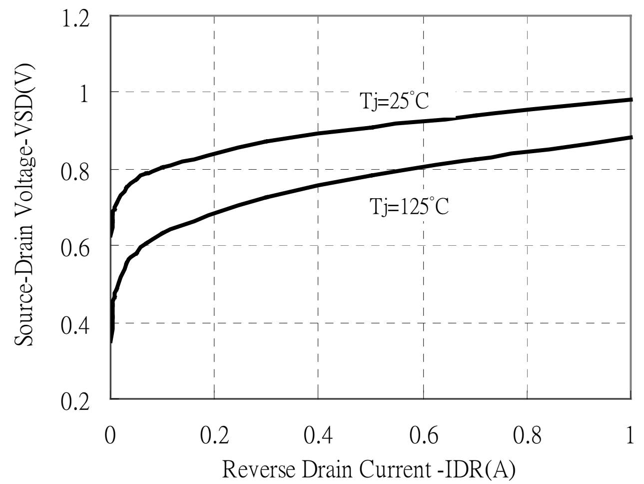
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

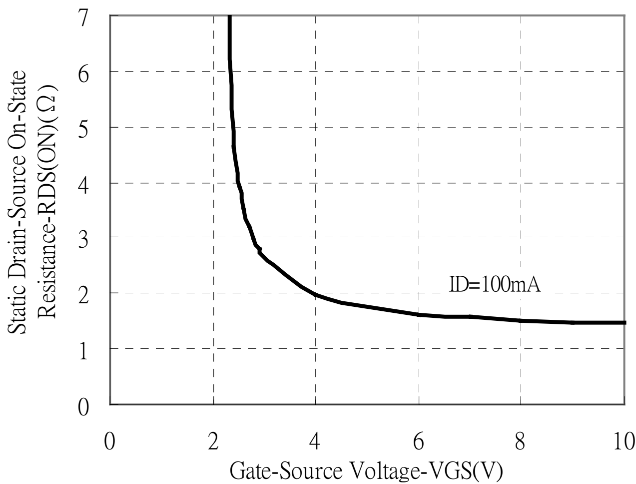
Typical Characteristics

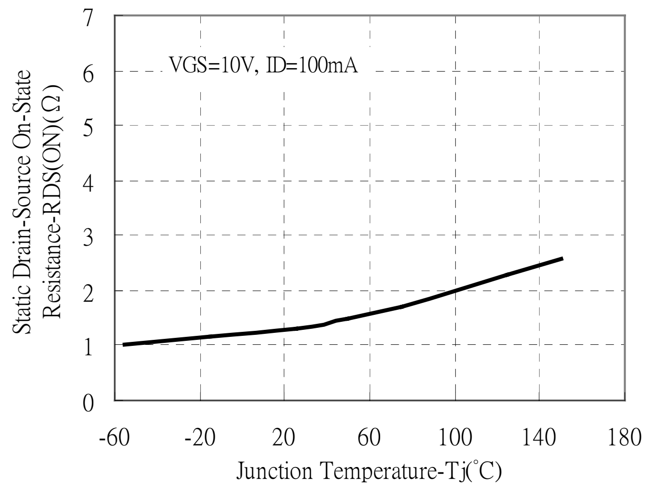




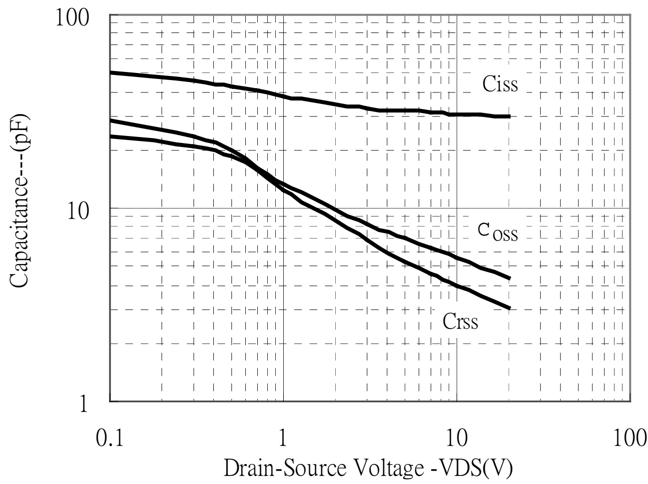


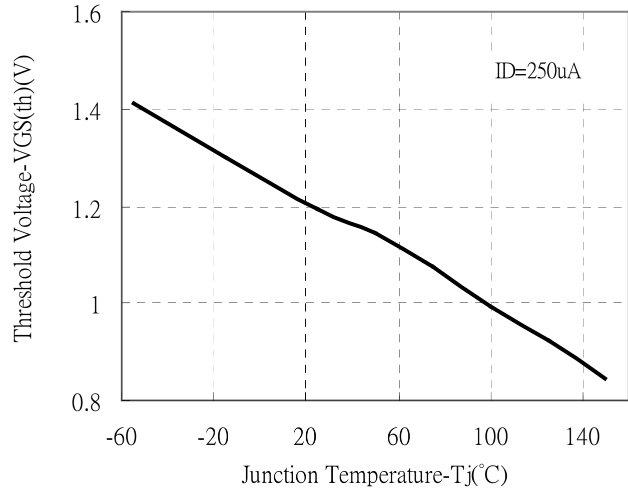


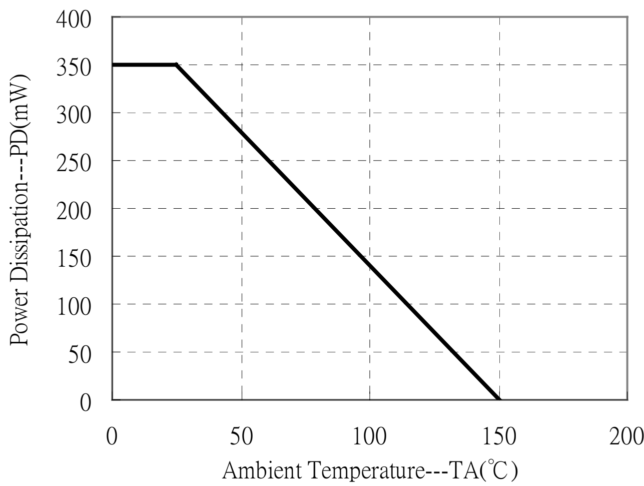




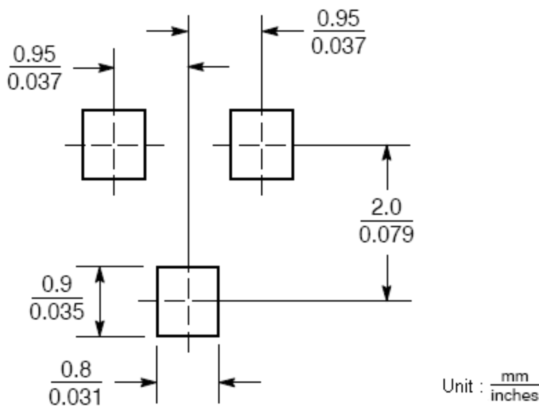
Typical Characteristics(Cont.)



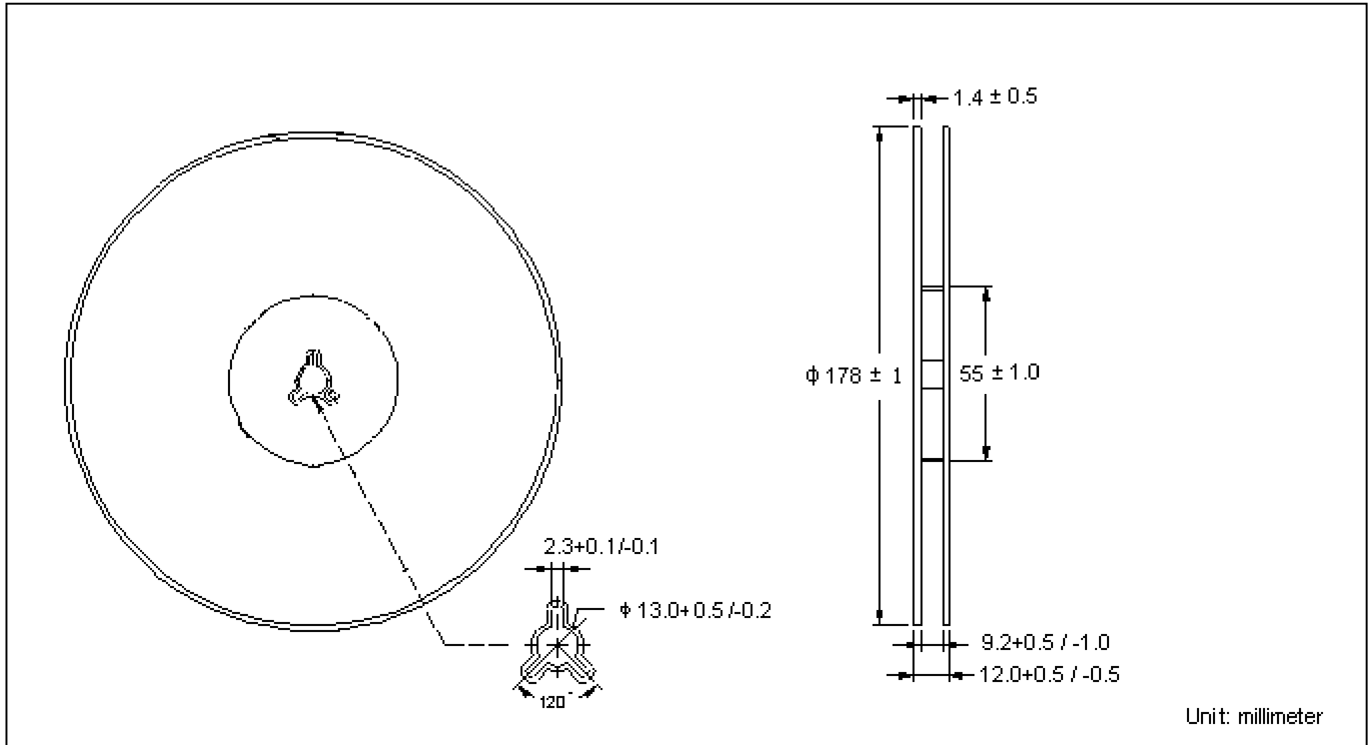




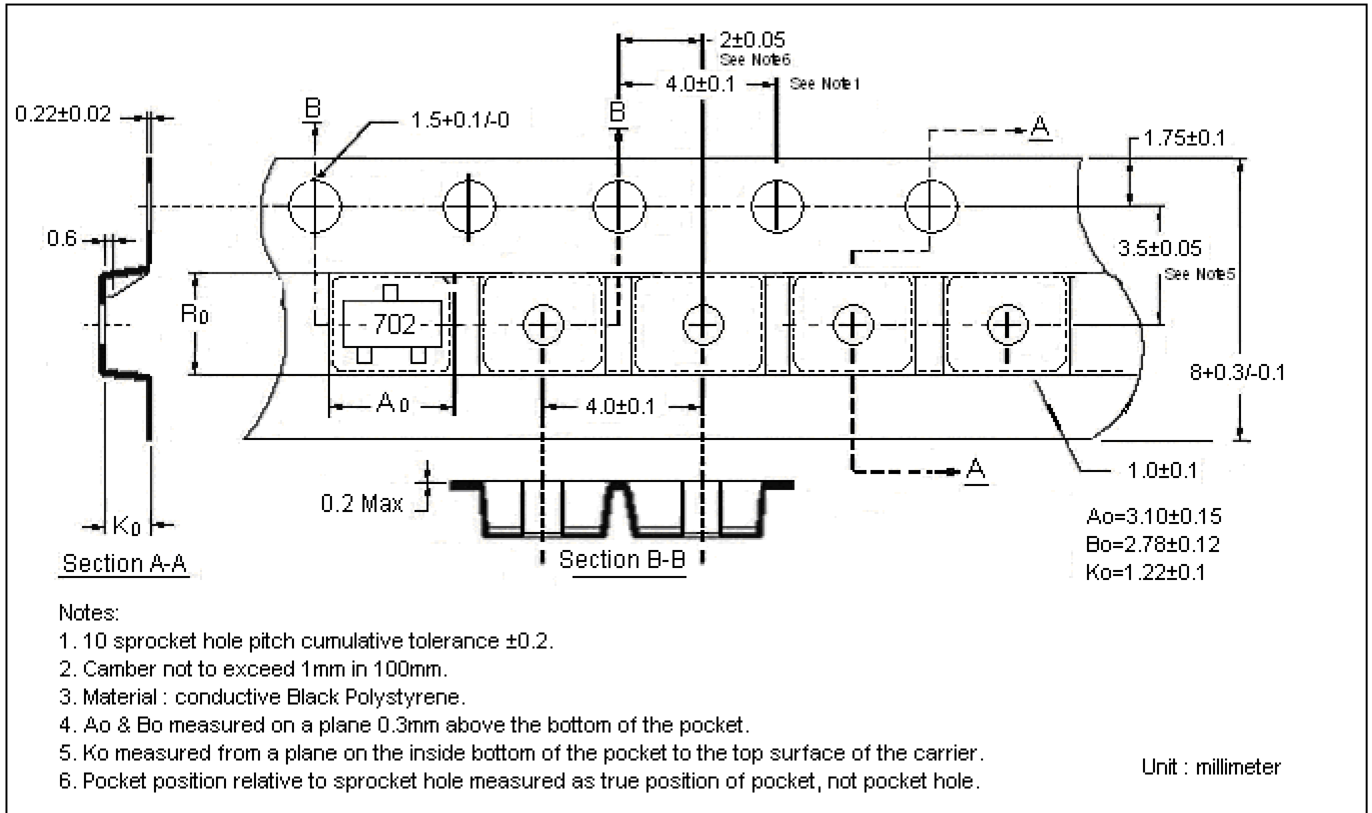
Recommended Soldering Footprint



Reel Dimension



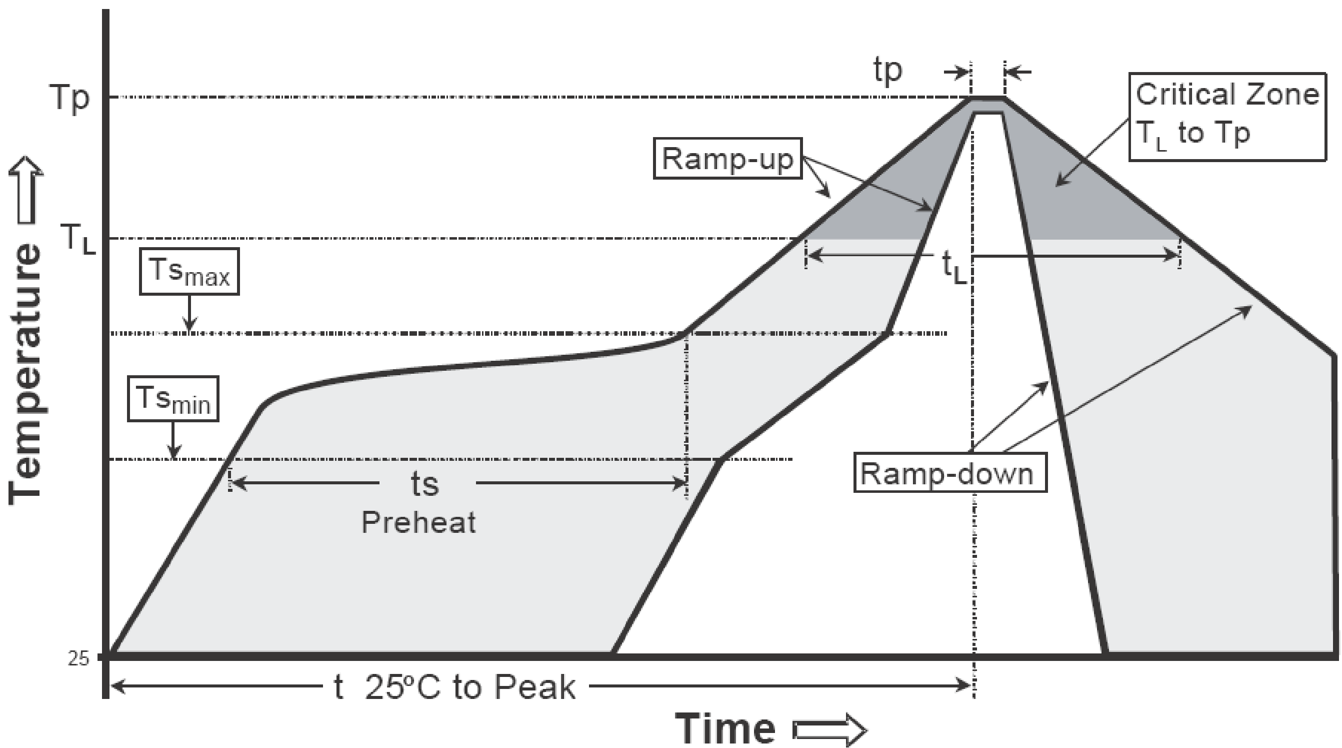
Carrier Tape Dimension



Recommended wave soldering condition

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

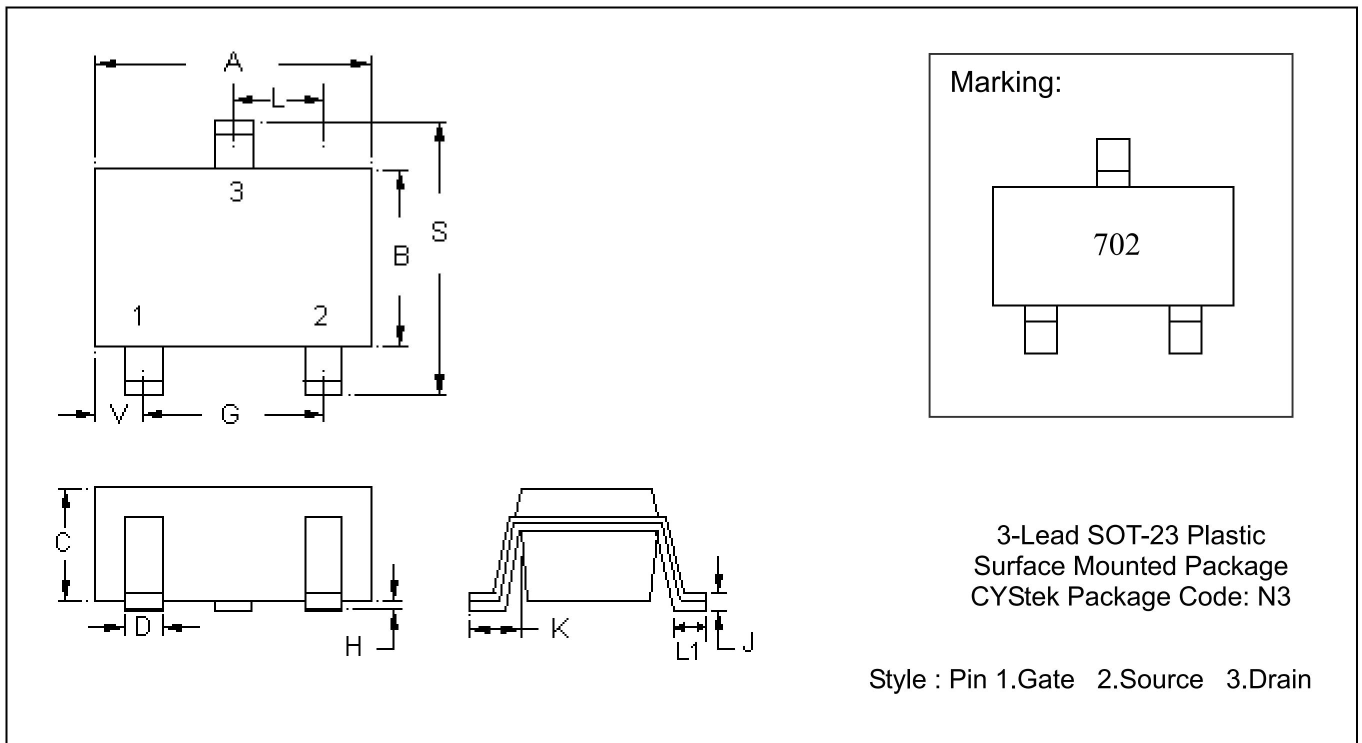
Recommended temperature profile for IR reflow



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(T_S min) −Temperature Max(T_S max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T_P)	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.

SOT-23 Dimension



*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

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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