

ESD protected N-CHANNEL MOSFET

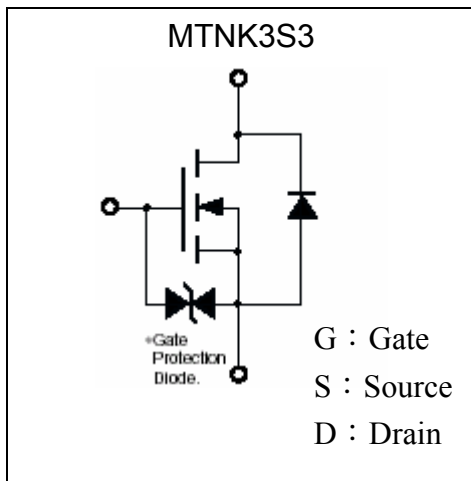
MTNK3S3

BV _{DSS}	20V
I _D	100mA
R _{DS(on)}	3Ω

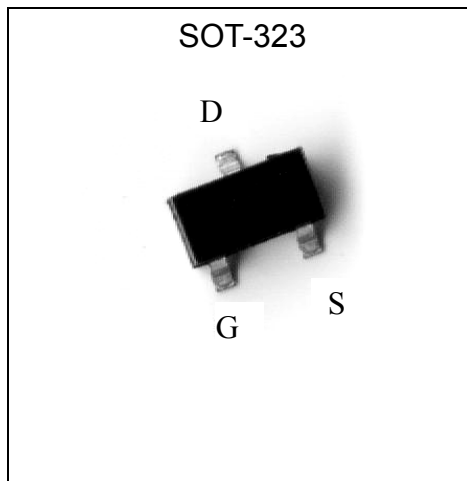
Description

- Low voltage drive, 1.8V
- Easy to use in parallel
- High speed switching
- ESD protected device
- Pb-free package

Symbol



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	BV _{DSS}	20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current	I _D	100	mA
Pulsed Drain Current (Ta=25°C)	I _{DM}	400 *1	mA
Total Power Dissipation (Ta=25°C)	P _D	200	mW
Total Power Dissipation (Tc=25°C)		400	
ESD susceptibility		350 *2	V
Operating Junction and Storage Temperature Range	T _j	-55~+150	°C
Thermal Resistance, Junction-to-Ambient	R _{th,ja}	625	°C/W
Thermal Resistance, Junction-to-Case	R _{th,jc}	250	°C/W
Lead Temperature, for 10 second Soldering	T _L	260	°C

Note : *1. Pulse Width ≤ 300μs, Duty cycle ≤ 2%

*2. Human body model, 1.5kΩ in series with 100pF



Electrical Characteristics (Ta=25°C)

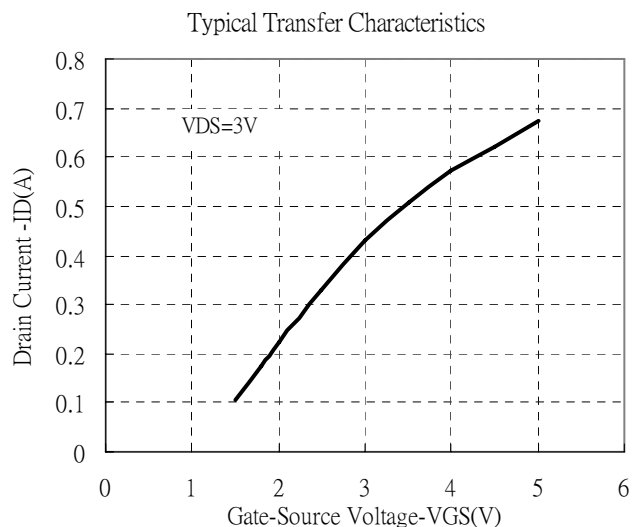
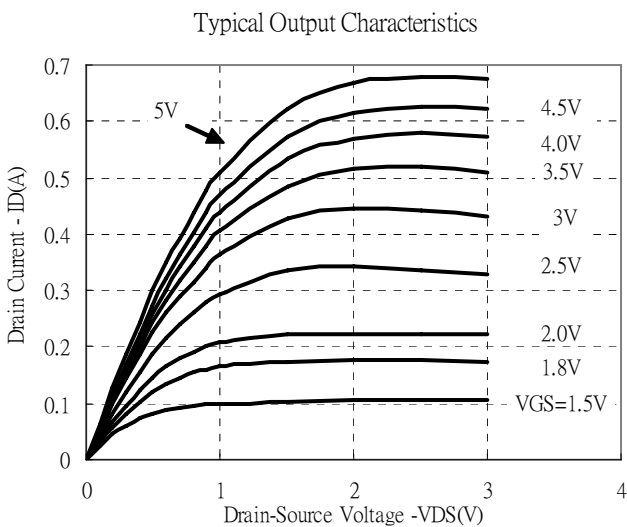
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =100μA
V _{GS(th)}	0.5	-	1.0	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±1	μA	V _{GS} =±8V, V _{DS} =0
I _{DSS}	-	-	500	nA	V _{DS} =20V, V _{GS} =0
R _{DS(ON)}	-	1.7	3	Ω	V _{GS} =4.5V, I _D =100mA
	-	3.5	6		V _{GS} =1.8V, I _D =20mA
G _{FS}	100	-	-	mS	V _{DS} =5V, I _D =100mA
Dynamic					
C _{iss}	-	23	50	pF	V _{DS} =10V, V _{GS} =0, f=1MHz
C _{oss}	-	7.7	25		
C _{rss}	-	5.8	5		
Source-Drain Diode					
*V _{SD}	-	-	1	V	V _{GS} =0V, I _S =10mA

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

Ordering Information

Device	Package	Shipping	Marking
MTNK3S3	SOT-323 (Pb-free)	3000 pcs / Tape & Reel	22

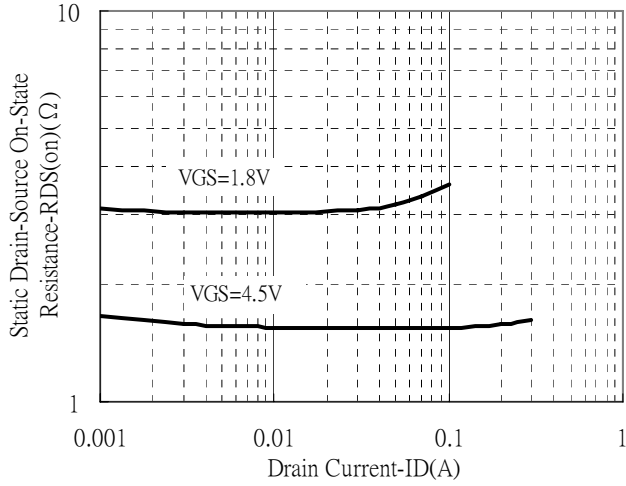
Characteristic Curves



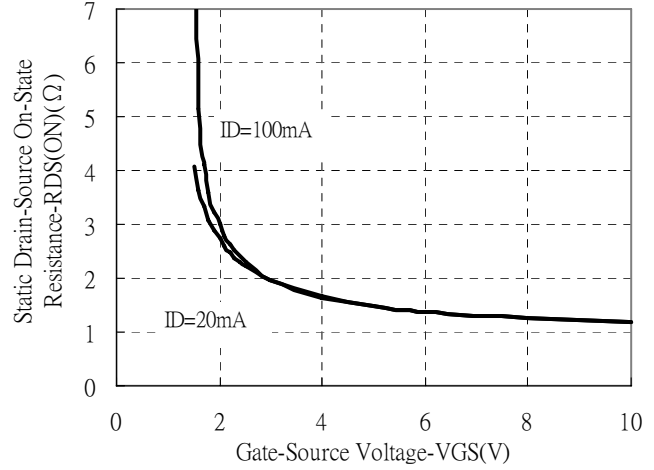


Characteristic Curves(Cont.)

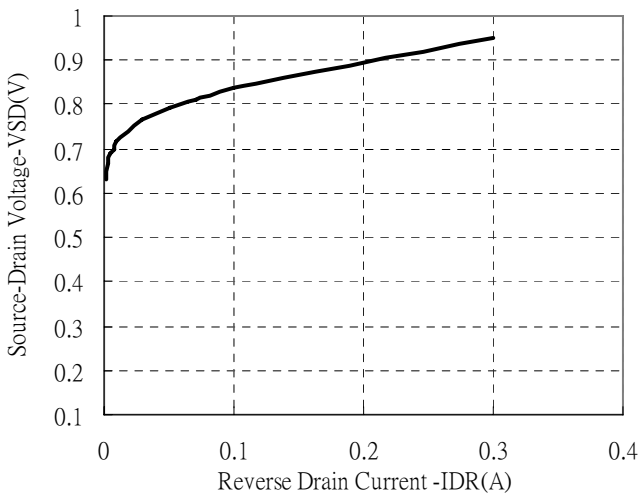
Static Drain-Source On-State resistance vs Drain Current



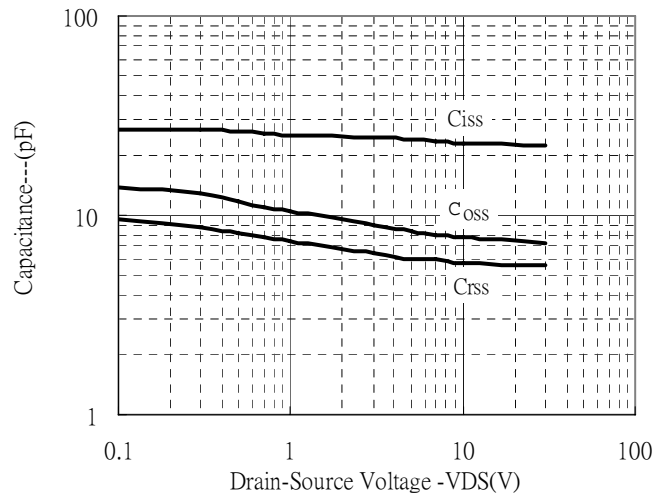
Static Drain-Source On-State Resistance vs Gate-Source Voltage



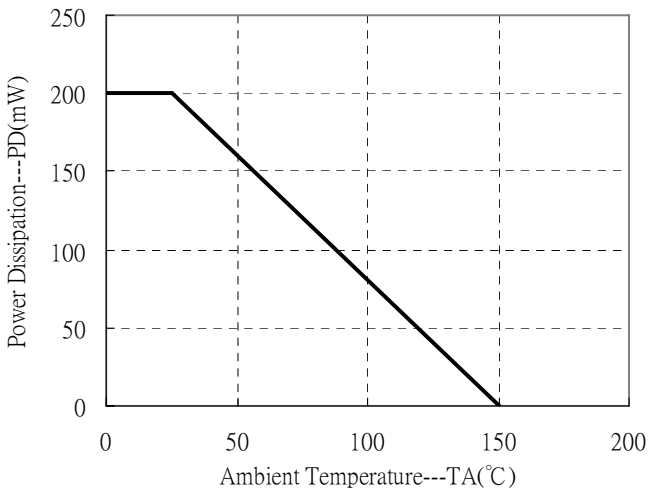
Reverse Drain Current vs Source-Drain Voltage



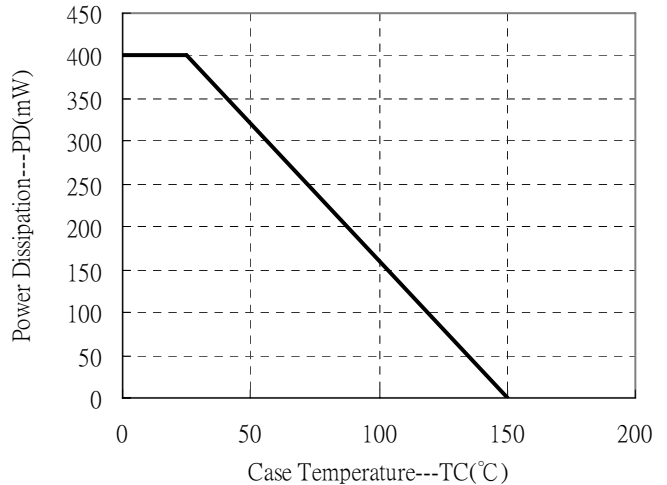
Capacitance vs Drain-to-Source Voltage



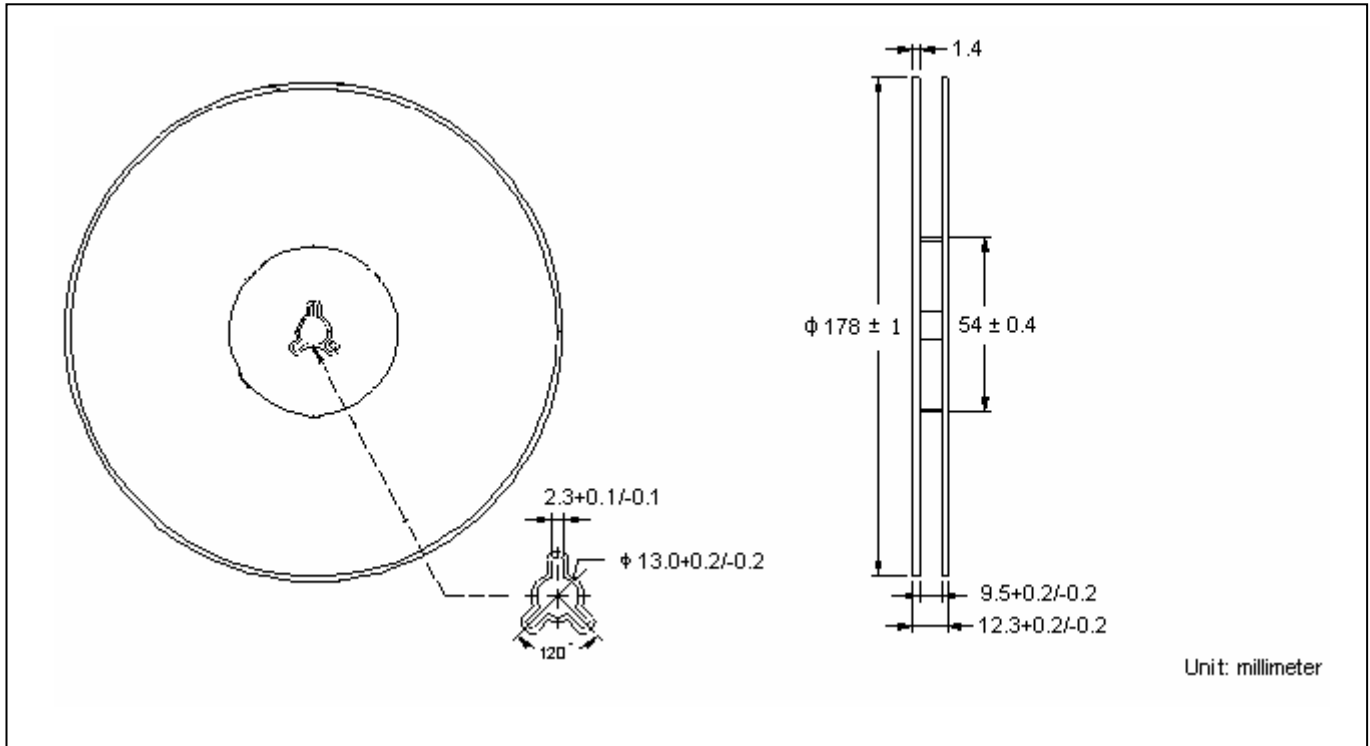
Power Derating Curve



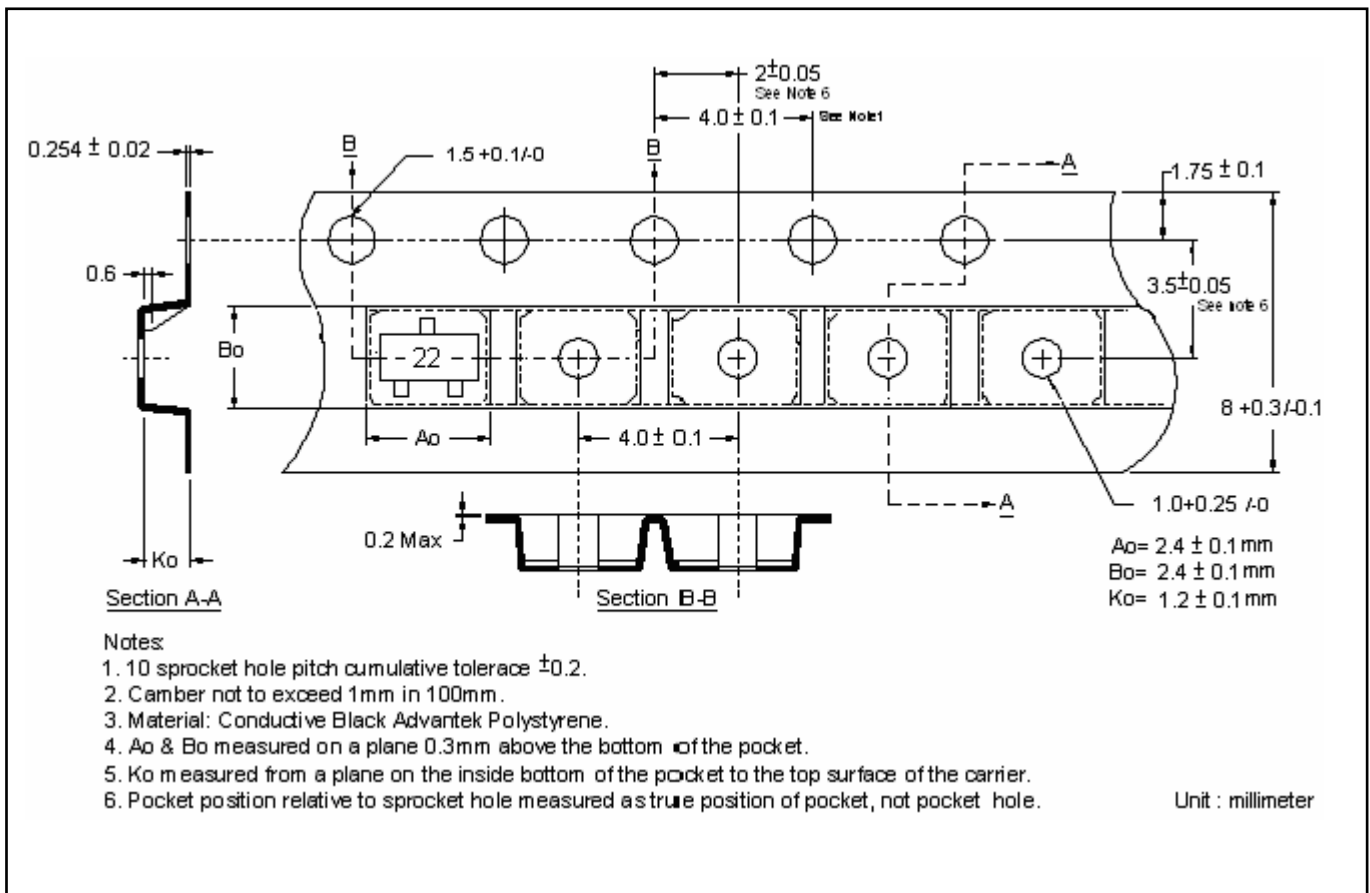
Power Derating Curve



Reel Dimension



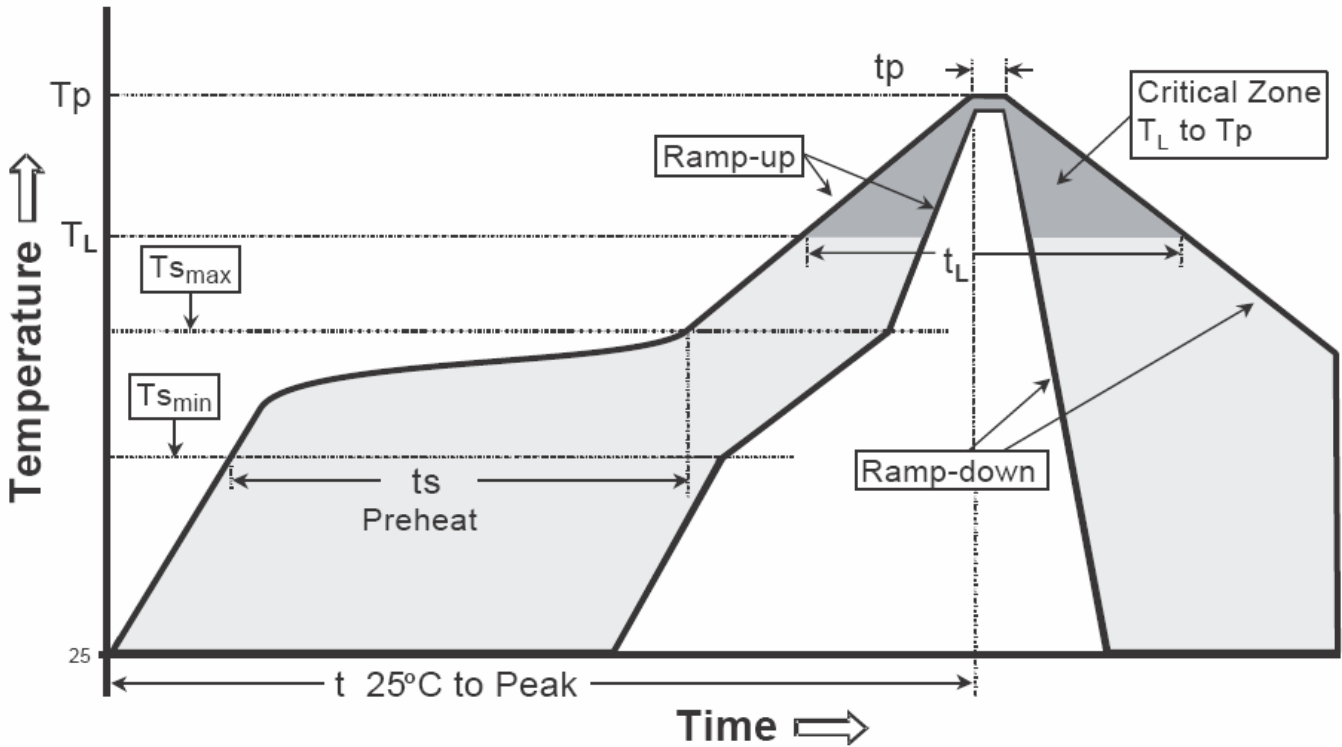
Carrier Tape Dimension



Recommended wave soldering condition

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

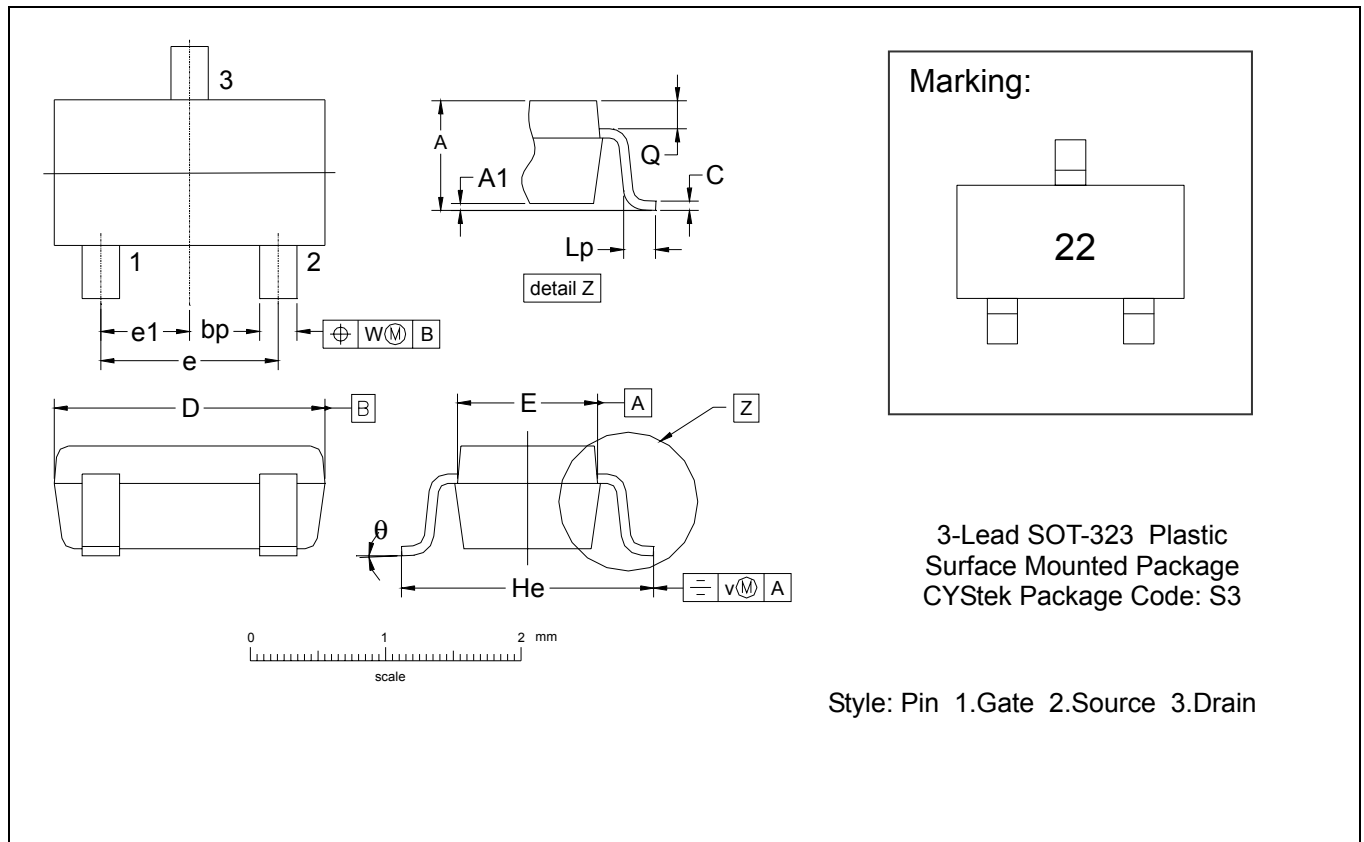
Recommended temperature profile for IR reflow



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.

SOT-323 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0315	0.0433	0.80	1.10	e1	0.0256	-	0.65	-
A1	0.0000	0.0039	0.00	0.10	He	0.0787	0.0886	2.00	2.25
bp	0.0118	0.0157	0.30	0.40	Lp	0.0059	0.0177	0.15	0.45
C	0.0039	0.0098	0.10	0.25	Q	0.0051	0.0091	0.13	0.23
D	0.0709	0.0866	1.80	2.20	v	0.0079	-	0.2	-
E	0.0453	0.0531	1.15	1.35	w	0.0079	-	0.2	-
e	0.0512	-	1.3	-	θ	-	-	10°	0°

- Notes:**
- Controlling dimension: millimeters.
 - Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 - If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: 42 Alloy ; pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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