ESD protected N-CHANNEL MOSFET

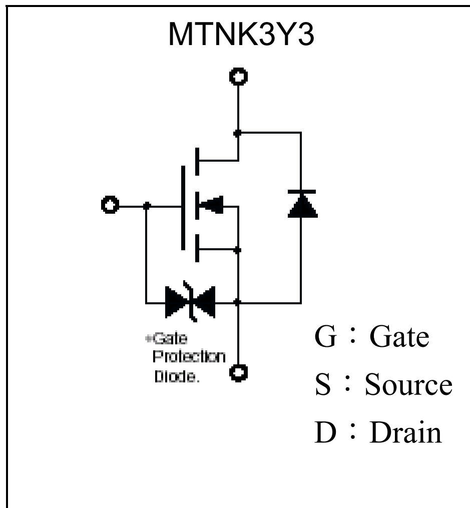
MTNK3Y3

BV_{DSS}	20V
I_D@V_{GS}=4.5V, T_A=25°C	255mA
R_{DSON}@V_{GS}=4.5V, I_D=255mA	1.7Ω(typ.)
R_{DSON}@V_{GS}=2.5V, I_D=20mA	2.2Ω(typ.)
R_{DSON}@V_{GS}=1.8V, I_D=20mA	3.5Ω(typ.)
R_{DSON}@V_{GS}=1.6V, I_D=20mA	4.1Ω(typ.)

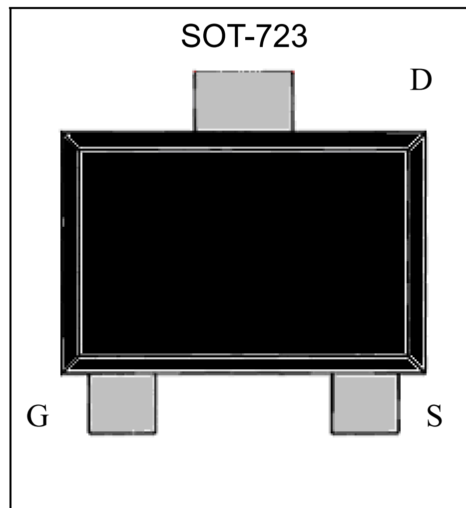
Description

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

Symbol

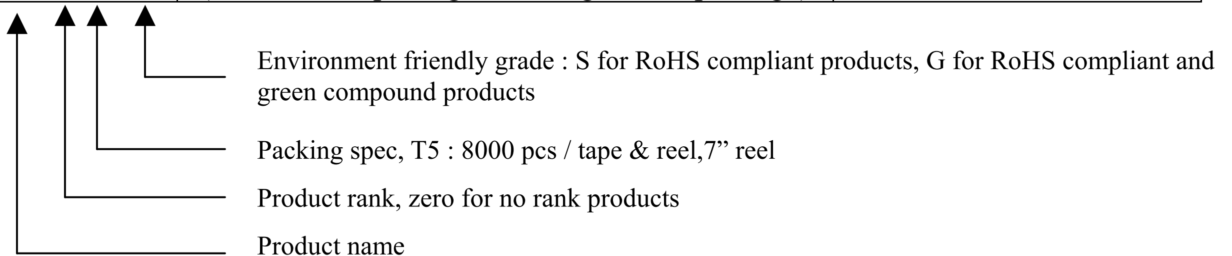


Outline



Ordering Information

Device	Package	Shipping
MTNK3Y3-0-T5-G	SOT-723 (Pb-free lead plating and halogen-free package)	8000 pcs / Tape & Reel



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits		Unit
Drain-Source Voltage	BV_{DSS}	20		V
Gate-Source Voltage	V_{GS}	±8		
Continuous Drain Current @V_{GS}=4.5V, T_A=25°C	I_D	255	*2	mA
		210	*3	
Pulsed Drain Current	I_{DM}	400	*1	
Total Power Dissipation	P_D	440	*2	mW
		310	*3	
ESD susceptibility		350	*4	V
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150		°C
Thermal Resistance, Junction-to-Ambient	Rth,ja	280	*2	°C/W
		400	*3	

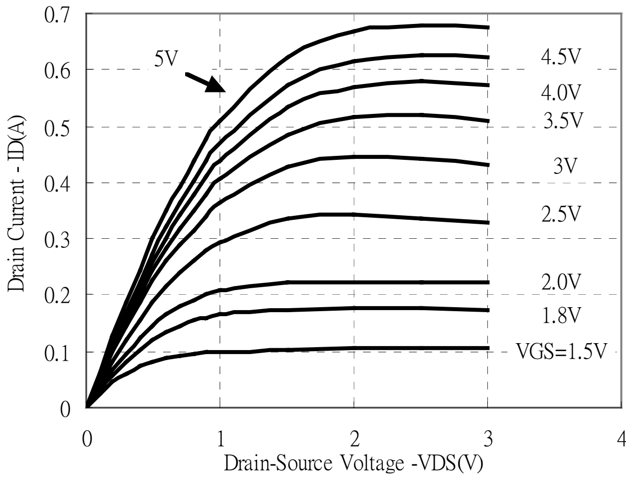
Note : *1. Pulse Width ≤ 300μs, Duty cycle ≤2%.
*2. When device mounted on FR-4 board with 1 sq inch pad size.
*3. When device mounted on FR-4 board with minimum pad size.
*4. Human body model, 1.5kΩ in series with 100pF.

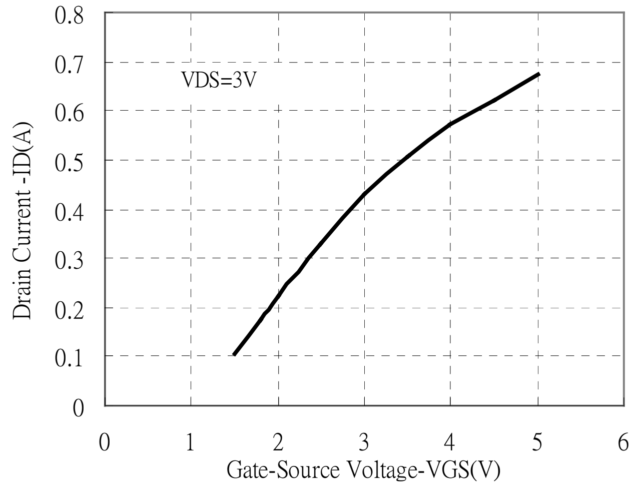
Electrical Characteristics (Ta=25°C)

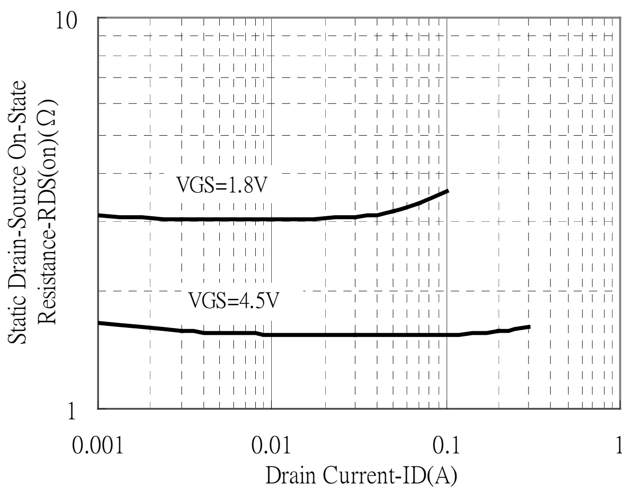
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	20	-	-	V	V_{GS}=0V, I_D=100μA
$V_{GS(th)}$	0.5	-	1.0		V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±1	μA	V_{GS}=±8V, V_{DS}=0V
I_{DSS}	-	-	500	nA	V_{DS}=20V, V_{GS}=0V
$R_{DS(ON)}$	-	1.7	3	Ω	V_{GS}=4.5V, I_D=255mA
	-	2.2	4.5		V_{GS}=2.5V, I_D=20mA
	-	3.5	6		V_{GS}=1.8V, I_D=20mA
	-	4.1	7		V_{GS}=1.6V, I_D=20mA
G_{FS}	100	-	-	mS	V_{DS}=5V, I_D=100mA
Dynamic					
C_{iss}	-	23	50	pF	V_{DS}=10V, V_{GS}=0V, f=1MHz
C_{oss}	-	7.7	25		
C_{rss}	-	5.8	12		
Source-Drain Diode					
*V_{SD}	-	-	1	V	V_{GS}=0V, I_S=10mA

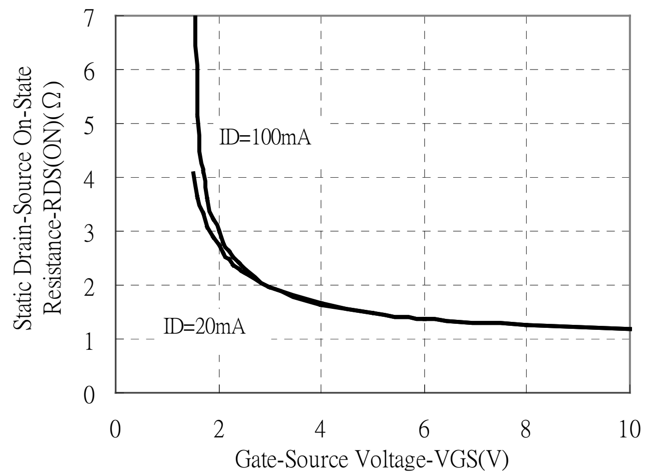
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

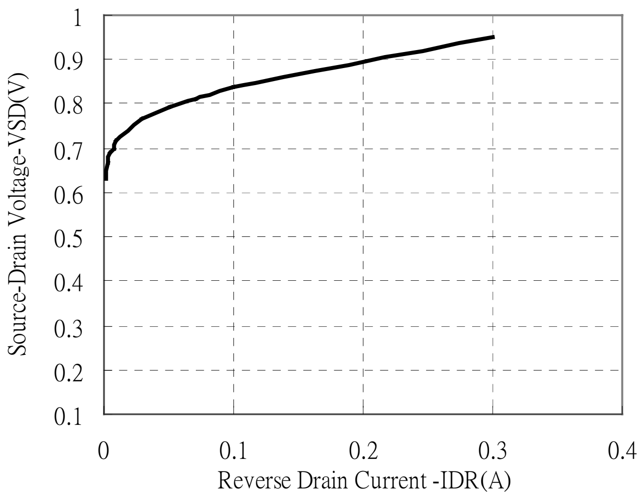
Typical Characteristics

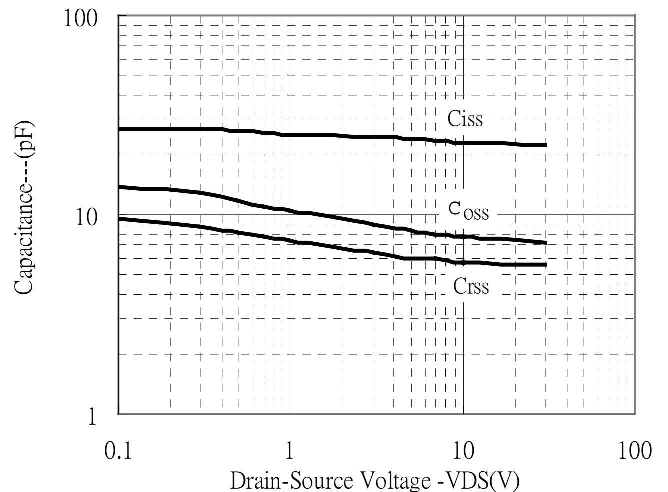




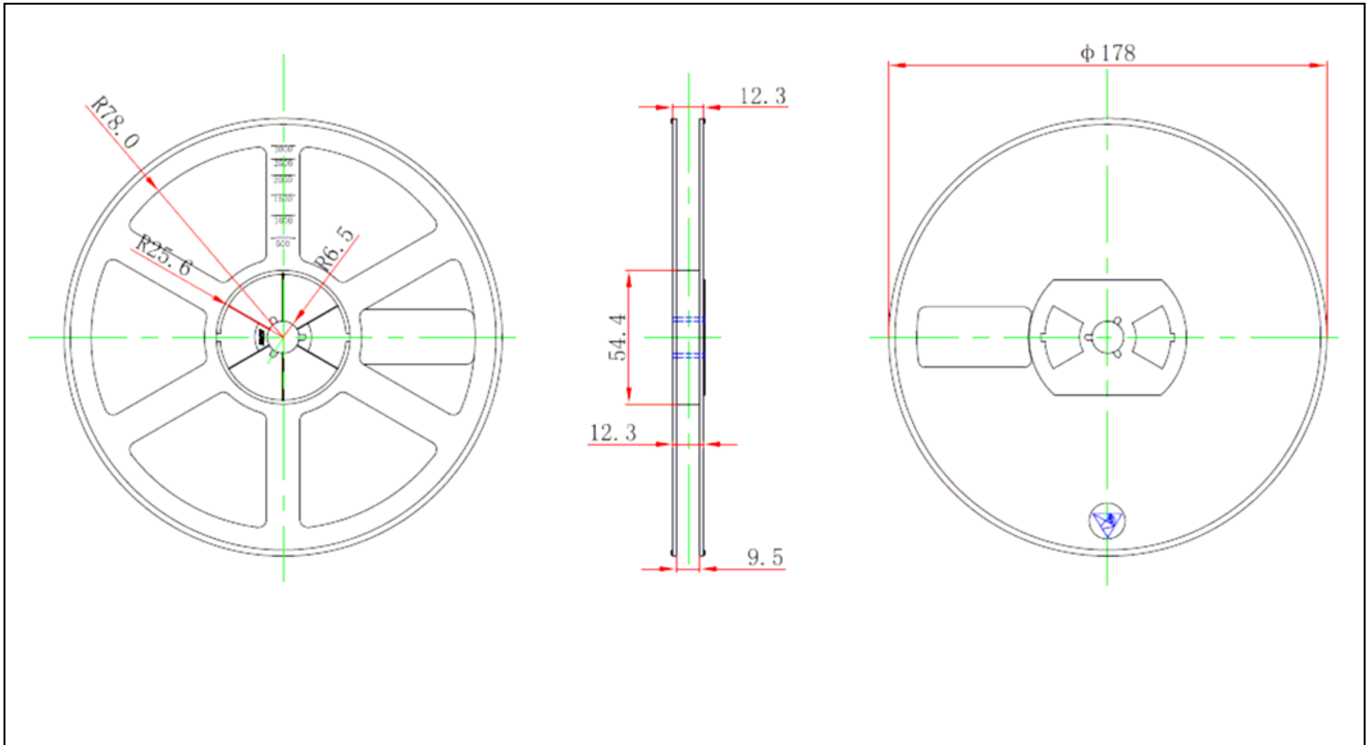




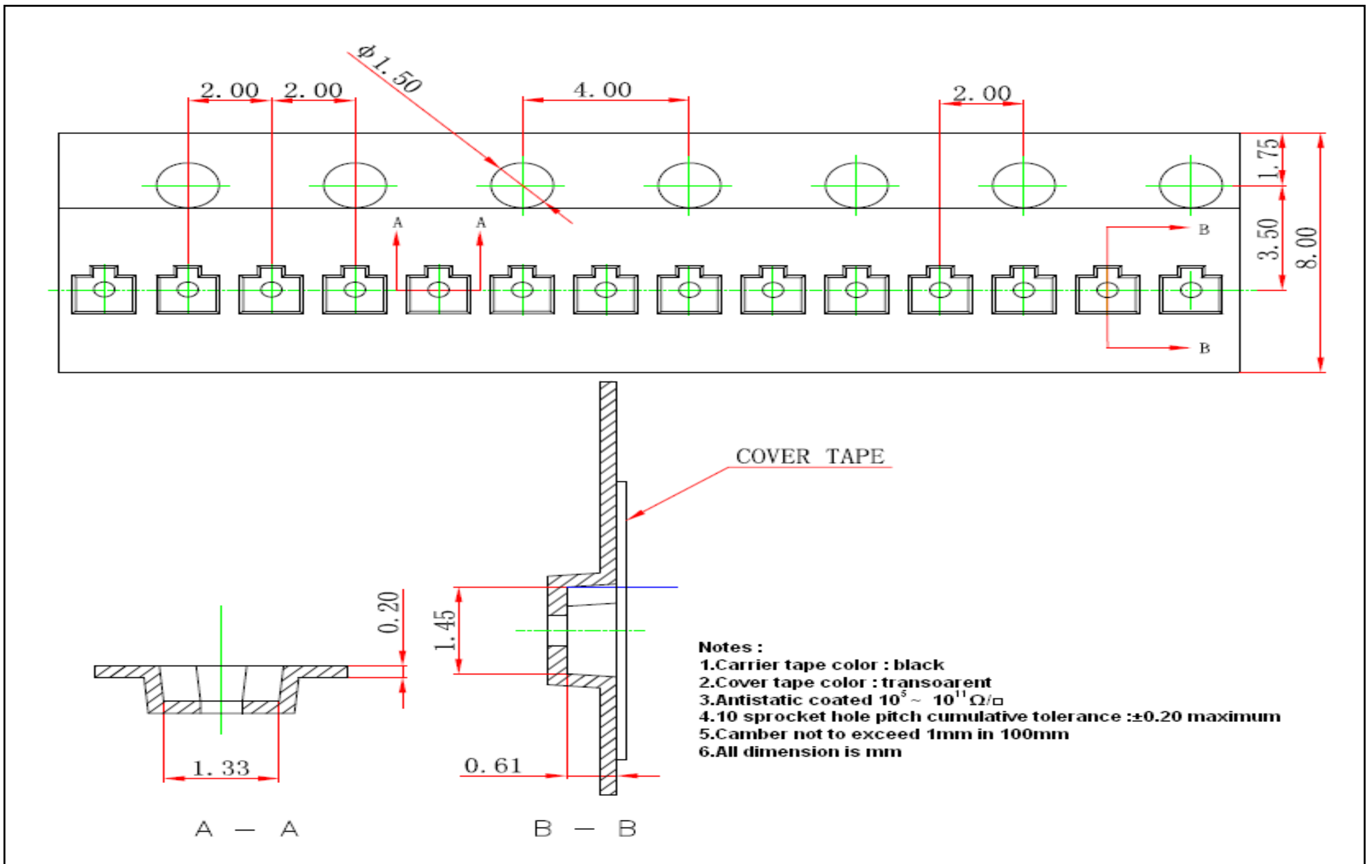




Reel Dimension



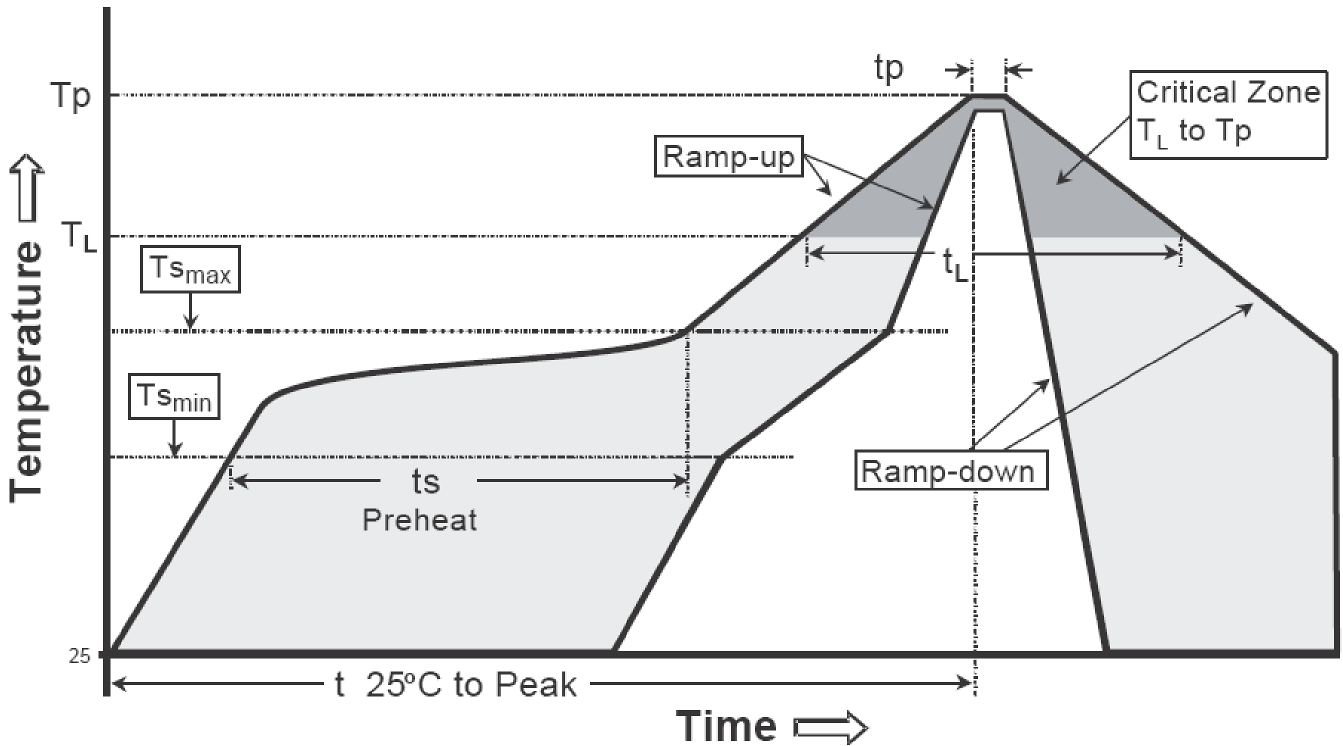
Carrier Tape Dimension



Recommended wave soldering condition

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

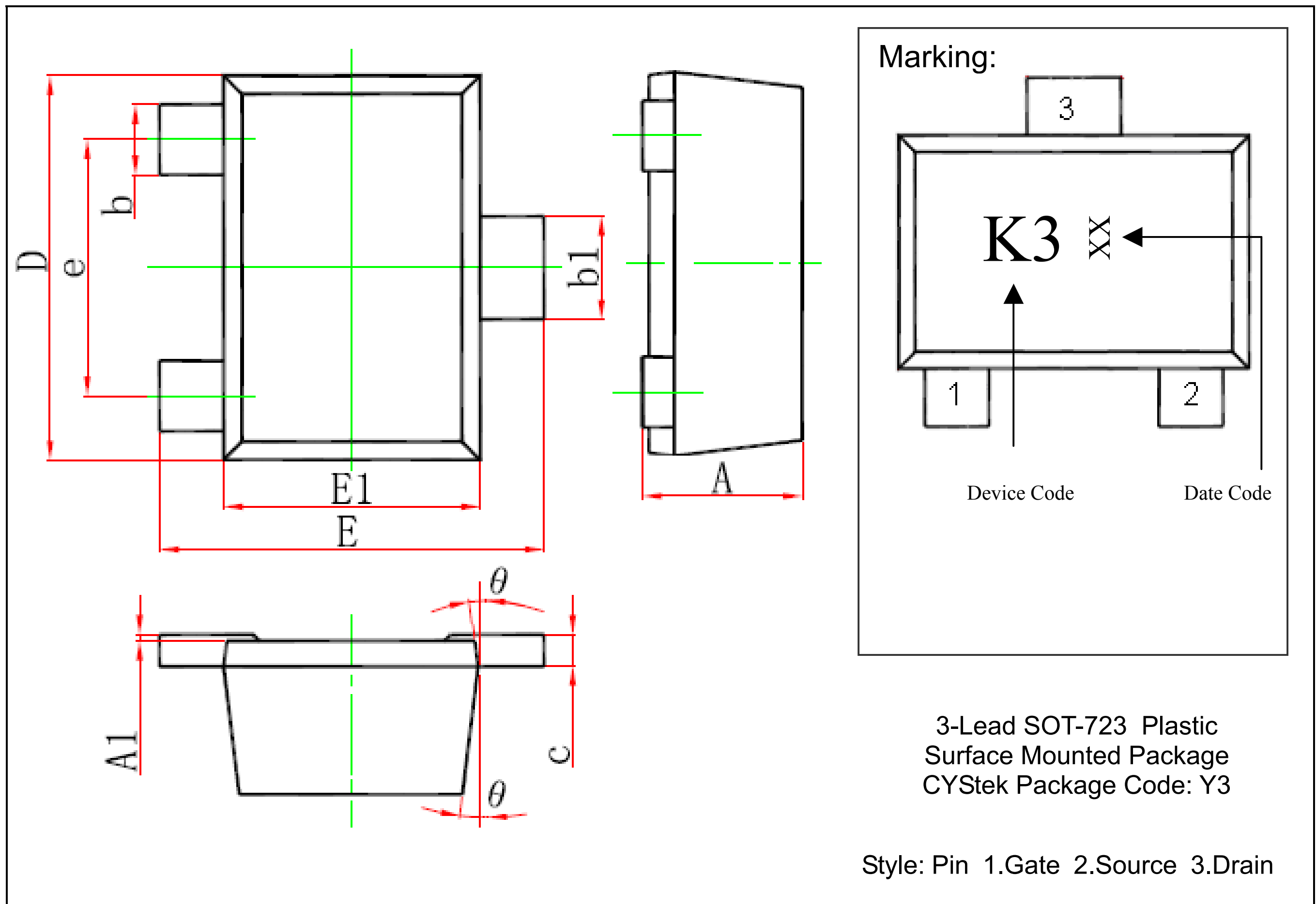
Recommended temperature profile for IR reflow



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) −Temperature Max(Ts 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 (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 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-723 Dimension



*Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.000	0.500	0.000	0.020	D	1.150	1.250	0.045	0.049
A1	0.000	0.050	0.000	0.002	E	1.150	1.250	0.045	0.049
b	0.170	0.270	0.007	0.011	E1	0.750	0.850	0.030	0.033
b1	0.270	0.370	0.011	0.015	e	0.800*		0.031*	
c	0.000	0.150	0.000	0.006	θ	7° REF		7° REF	

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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