

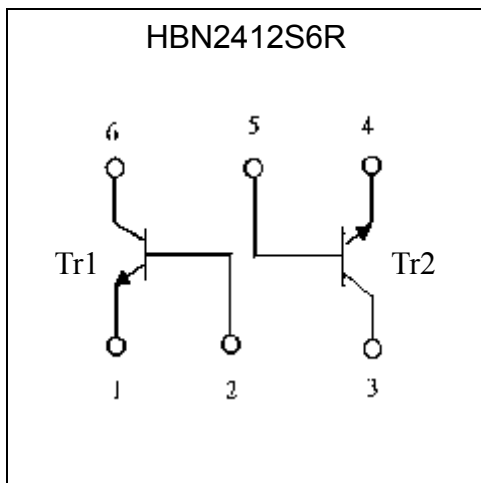
**General Purpose NPN Epitaxial Planar Transistors
 (dual transistors)**

HBN2412S6R

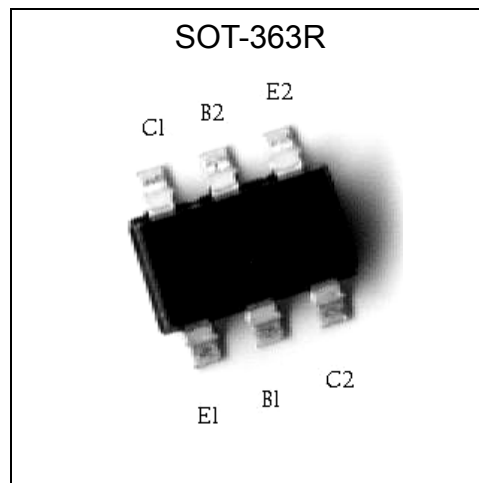
Features

- Two BTC2412 chips in a SOT-363R package.
- Mounting possible with SOT-323 automatic mounting machines.
- Transistor elements are independent, eliminating interference.
- Mounting cost and area can be cut in half.
- Low Cob. Typ. Cob=2.0pF.
- Complementary to HBP1037S6R.
- Pb-free lead plating and halogen-free package.

Equivalent Circuit



Outline



Ordering Information

Device	Package	Shipping
HBN2412S6R-0-T1-G	SOT-363 (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



The following characteristics apply to both Tr1 and Tr2

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	60	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current	I _C	200	mA
Power Dissipation	P _d	200(total) (Note)	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55~+150	°C

Note : 150mW per element must not be exceeded.

Characteristics (Ta=25°C)

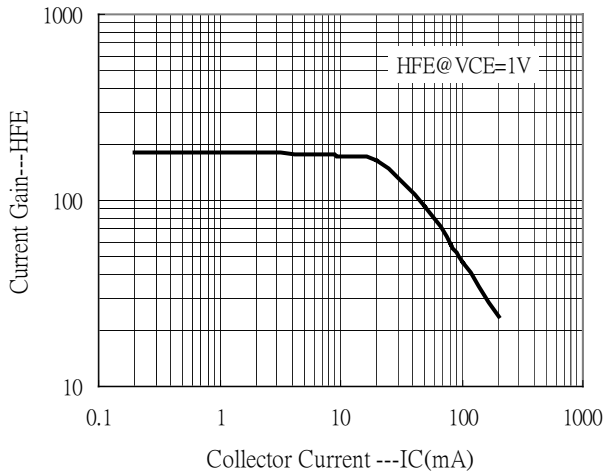
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	60	-	-	V	I _C =100μA
BV _{CEO}	50	-	-	V	I _C =1mA
BV _{EBO}	6	-	-	V	I _E =50μA
I _{CB0}	-	-	100	nA	V _{CB} =60V
I _{EBO}	-	-	100	nA	V _{EB} =5V
V _{CE(sat)}	-	-	0.3	V	I _C =100mA, I _B =10mA
V _{BE(sat)}	-	-	1	V	I _C =100mA, I _B =10mA
h _{FE}	200	-	560	-	V _{CE} =6V, I _C =1mA
h _{FE}	25	-	-	-	V _{CE} =6V, I _C =150mA
f _T	300	-	-	MHz	V _{CE} =20V, I _C =10mA, f=100MHz
C _{ob}	-	-	4	pF	V _{CB} =5V, f=1MHz

*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

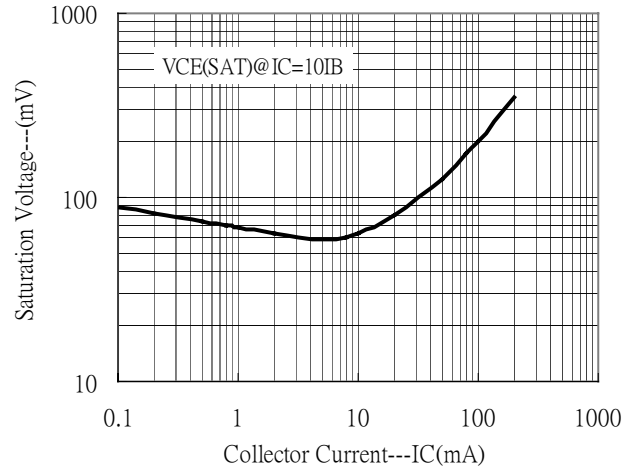


Typical Characteristics

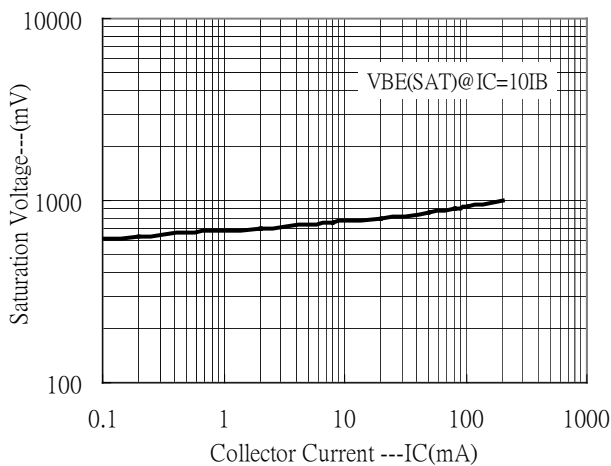
Current Gain vs Collector Current



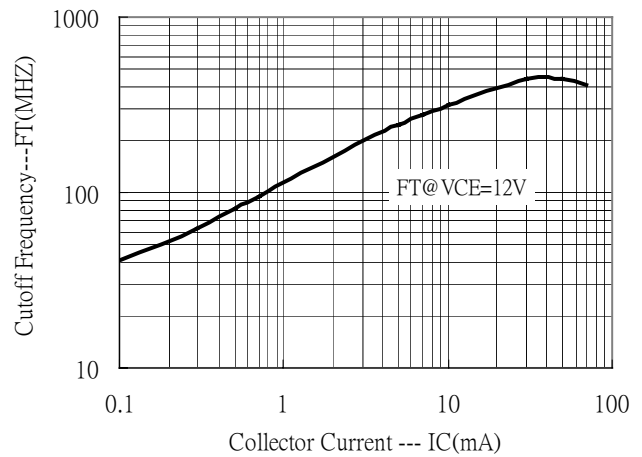
Saturation Voltage vs Collector Current



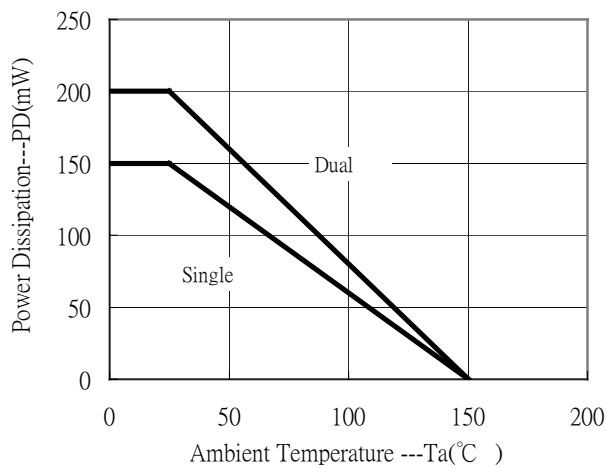
Saturation Voltage vs Collector Current



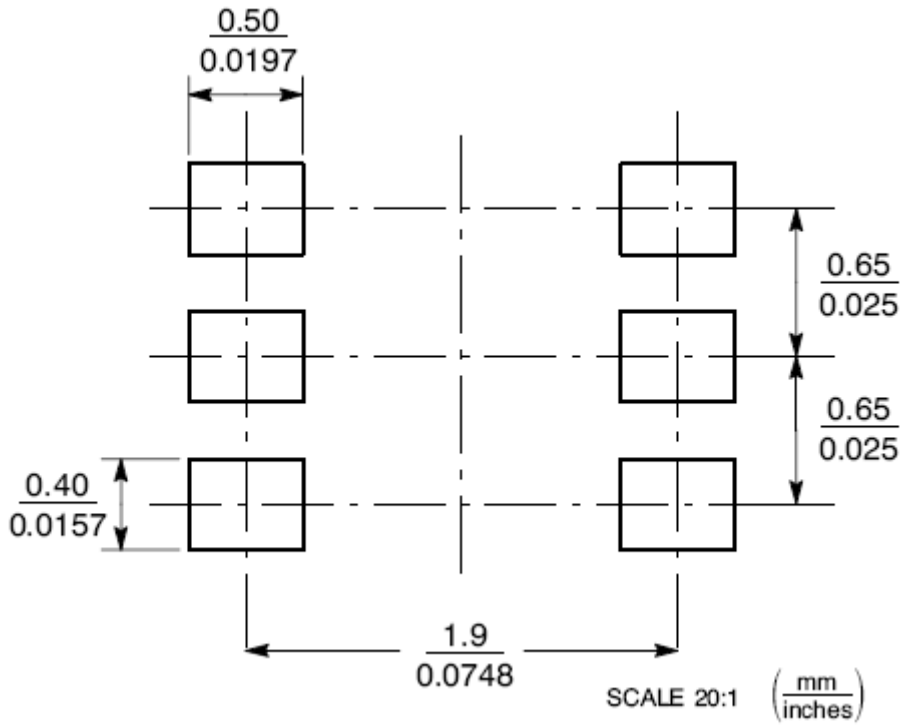
Cutoff Frequency vs Collector Current



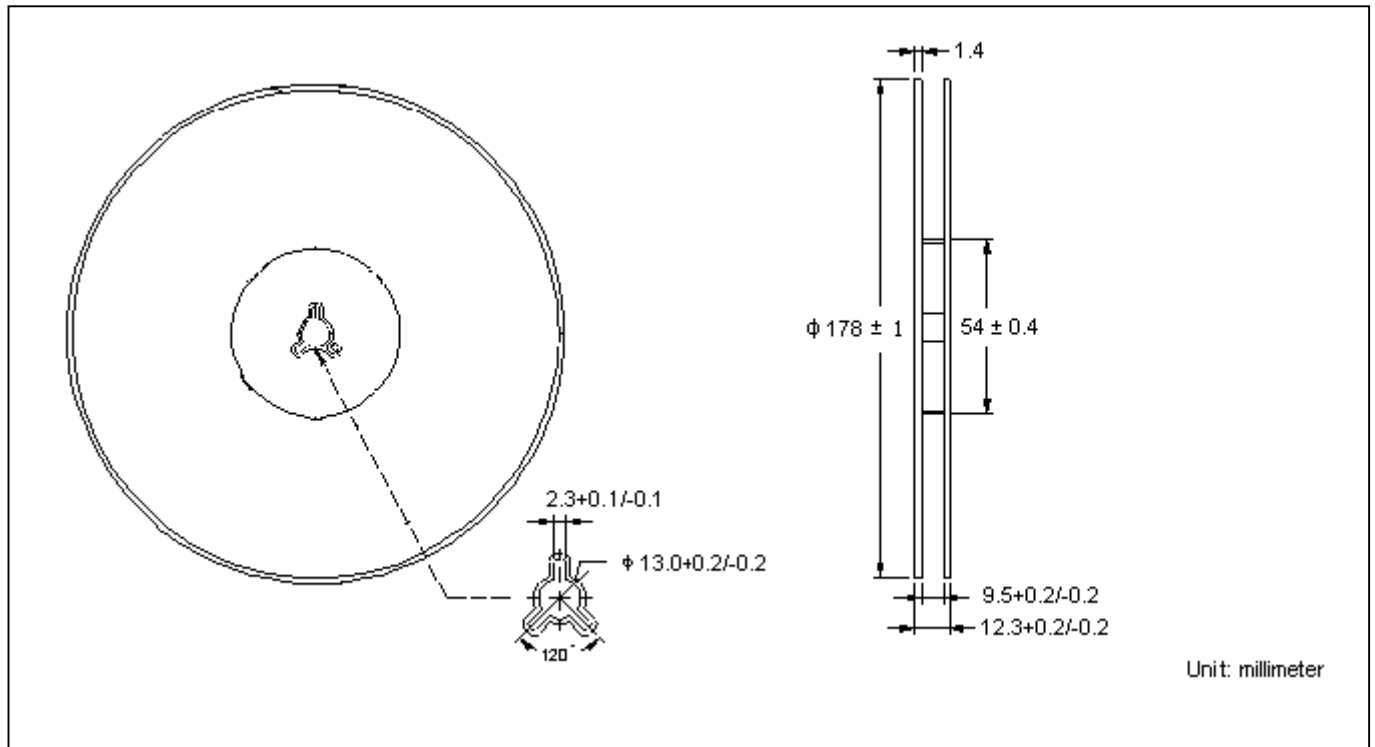
Power Derating Curves



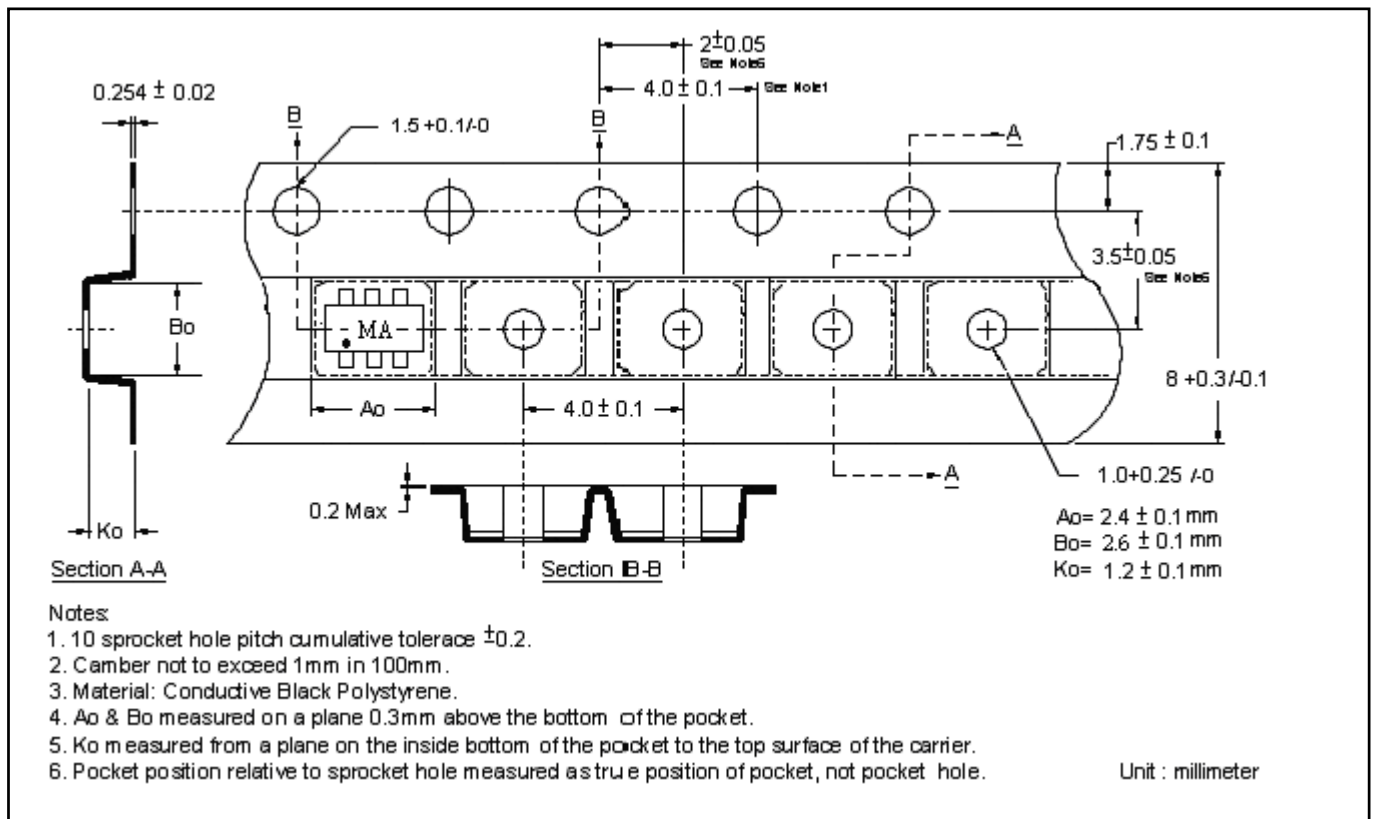
Recommended Soldering Footprint



Reel Dimension



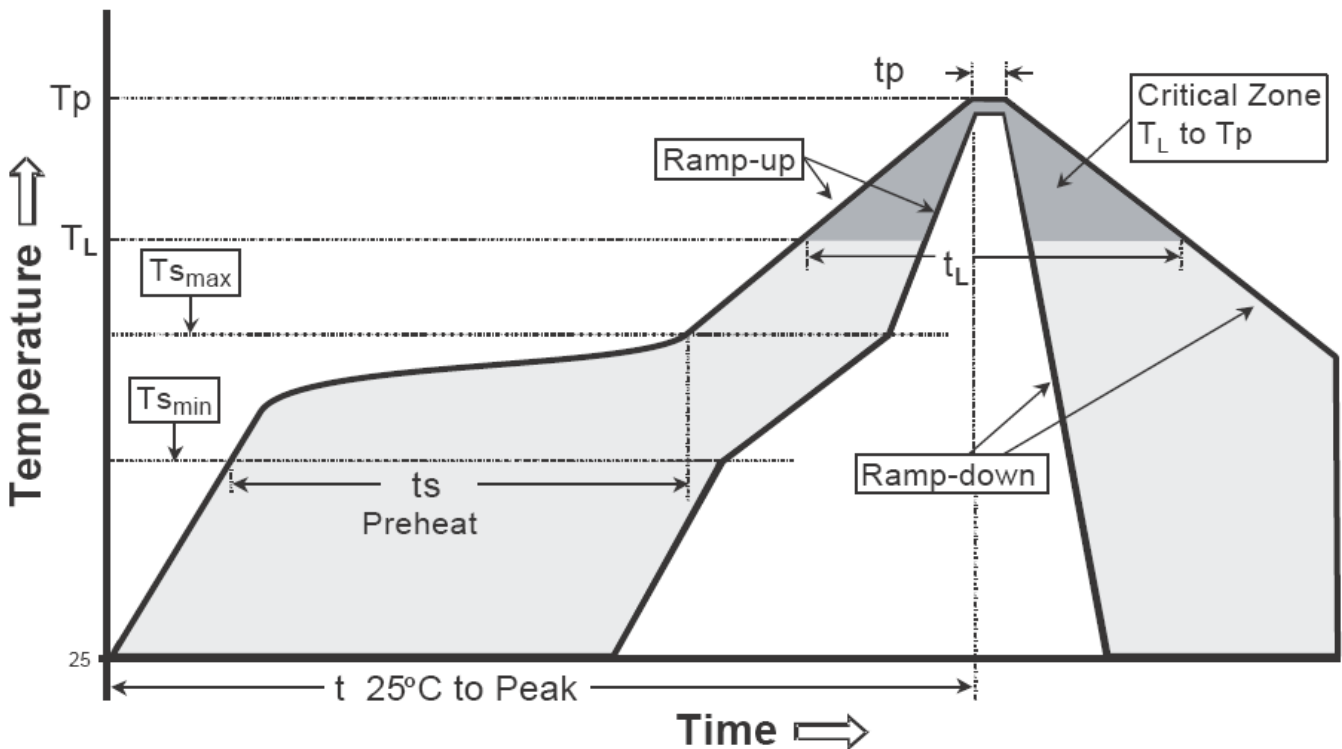
Carrier Tape Dimension



Recommended wave soldering condition

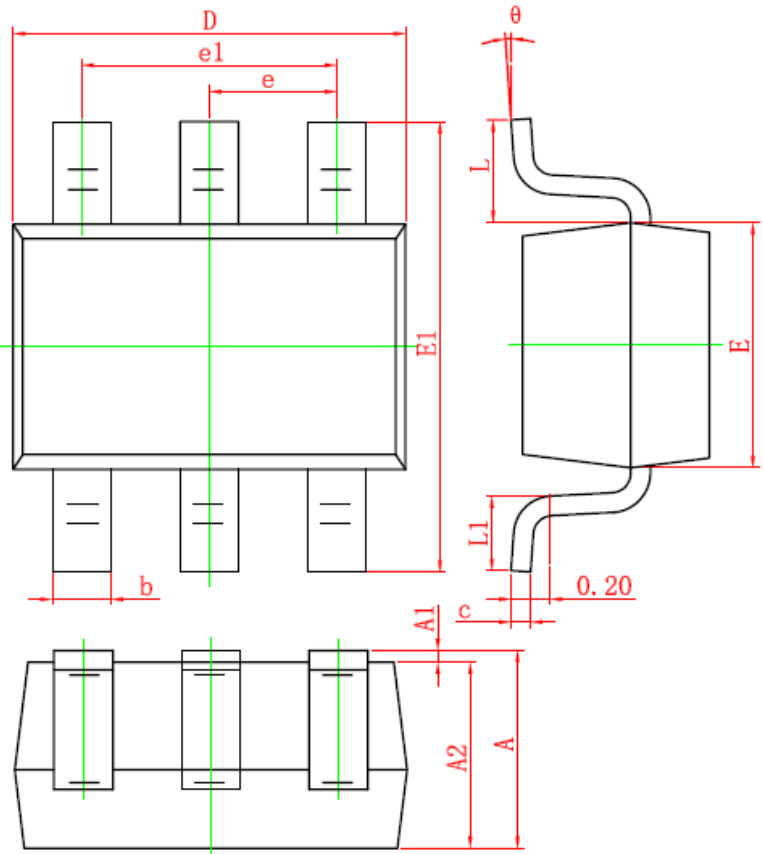
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



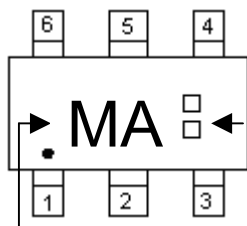
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	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.

SOT-363 Dimension



The diagram shows three views of the SOT-363 package: a top view, a side view, and a bottom view. Dimensions are labeled in red: D (total width), e1 (pitch), e (lead pitch), E1 (height), b (lead width), A1 (lead height), c (lead thickness), A2 (lead length), A (total length), L (lead length), L1 (lead length), and θ (lead angle). A 0.20 dimension is also shown for the lead thickness.

Marking:



Date Code:
 Year + Month
 Year : 6→2006,
 7→2007, ..., etc
 Month : 1→Jan
 2→Feb, ..., 9→
 Sep, A→Oct, B
 →Nov, C→Dec

Device Code

6-Lead SOT-363R Plastic Surface Mounted Package
 CYStek Package Code: S6R

Style:
 Pin 1. Emitter1 (E1)
 Pin 2. Base1 (B1)
 Pin 3. Collector2 (C2)
 Pin 4. Emitter2 (E2)
 Pin 5. Base2 (B2)
 Pin 6. Collector1 (C1)

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650	TYP	0.026	TYP
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.150	0.350	0.006	0.014	L	0.525	REF	0.021	REF
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					

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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