

PNP Epitaxial Planar Power Transistor

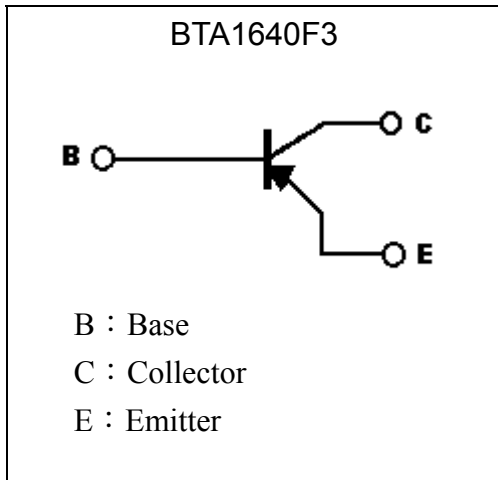
BTA1640F3

BV_{CEO}	-30V
I_C	-7A
$V_{CE(SAT)}$	-0.4V(max)

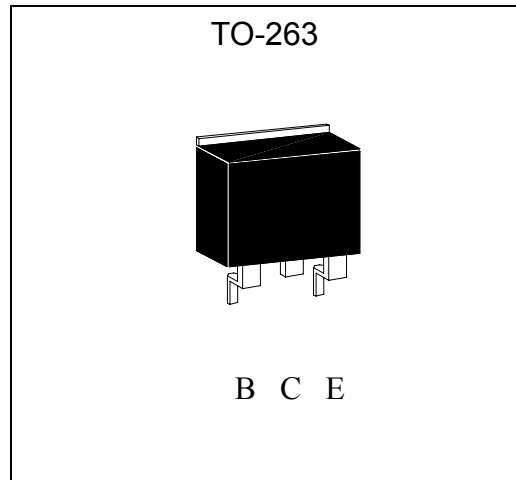
Features

- Low collector-emitter saturation voltage, $V_{CE(sat)} = -0.4V(max)$ @ $I_C = -3A, I_B = -0.1A$
- Excellent current gain linearity
- Pb-free lead plating package

Symbol

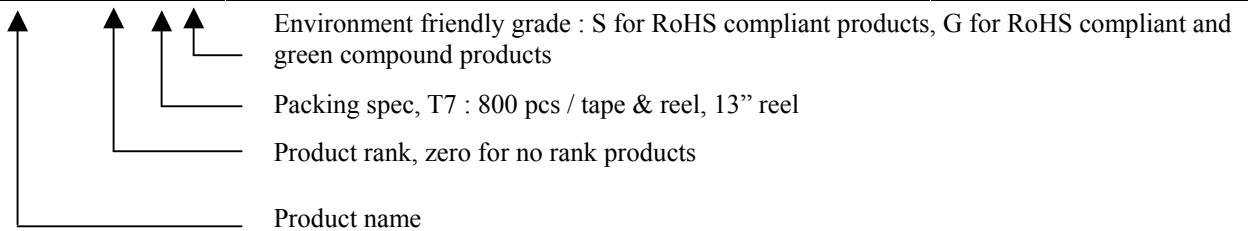


Outline



Ordering Information

Device	Package	Shipping
BTA1640F3-0-T7-X	TO-263 (Pb-free lead plating and RoHS compliant package)	800 pcs / Tape & Reel





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CB0}	-30	V
Collector-Emitter Voltage	V _{CE0}	-30	V
Emitter-Base Voltage	V _{EBO}	-18	V
Collector Current (DC)	I _C	-7	A
Collector Current (Pulse)	I _{CP}	-10 (Note 1)	
Power Dissipation @ T _A =25°C	P _D	2	W
Power Dissipation @ T _C =25°C	P _D	60	
Thermal Resistance, Junction to Ambient	R _{θJA}	62.5	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	2.08	°C/W
Operating Junction Temperature Range	T _J	-55~+150	°C
Storage Temperature Range	T _{stg}	-55~+150	°C

Note : 1. Single Pulse , P_w ≤ 300μs, Duty ≤ 2%.

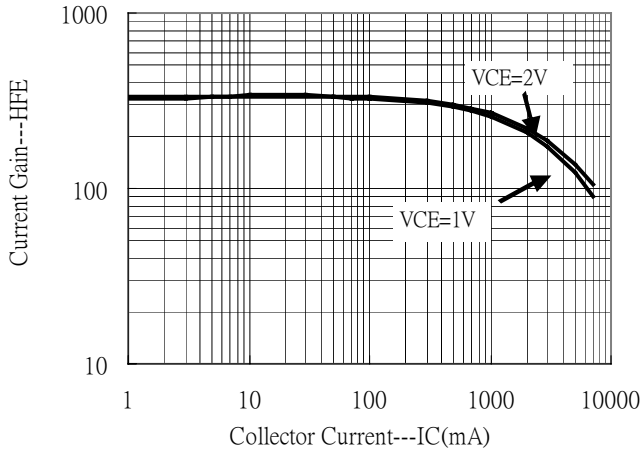
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
*BV _{CEO}	-30	-	-	V	I _C =-10mA, I _B =0
BV _{CB0}	-30	-	-	V	I _C =-1mA, I _E =0
BV _{EBO}	-18	-	-	V	I _E =-1mA, I _C =0
I _{CEO}	-	-	-50	μA	V _{CE} =-30V, I _B =0
I _{CB0}	-	-	-10	μA	V _{CB} =-30V, I _B =0
I _{EBO}	-	-	-10	μA	V _{EB} =-18V, I _C =0
*V _{CE(sat)}	-	-	-0.4	V	I _C =-3A, I _B =-100mA
*V _{BE(sat)}	-	-	-1	V	I _C =-3A, I _B =-100mA
*h _{FE}	160	-	450	-	V _{CE} =-2V, I _C =-200mA

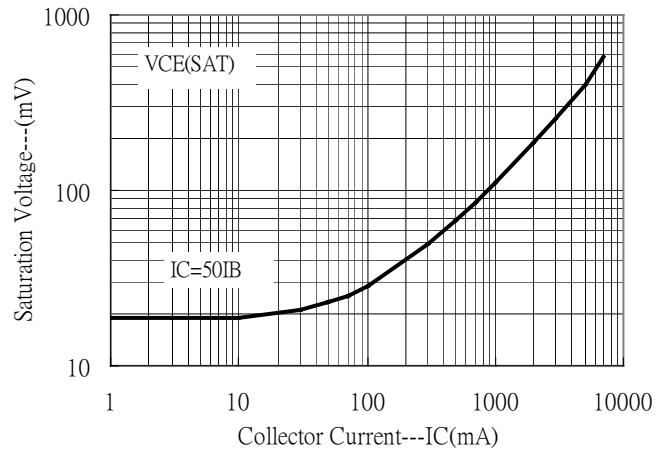
*Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Typical Characteristics

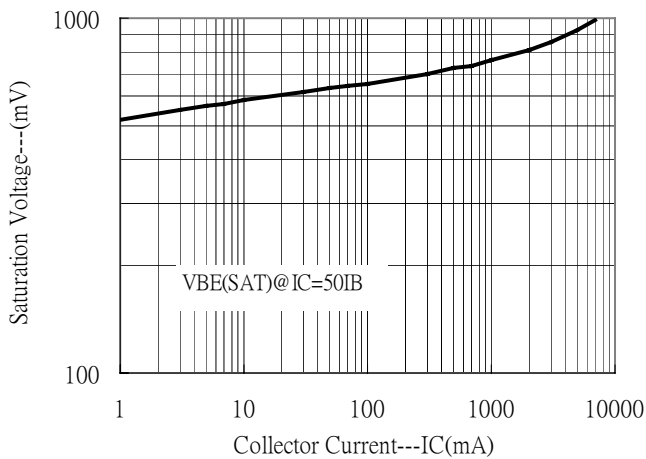
Current Gain vs Collector Current



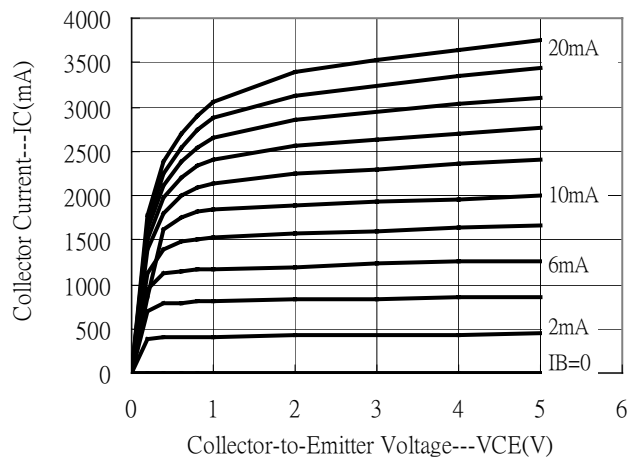
Saturation Voltage vs Collector Current



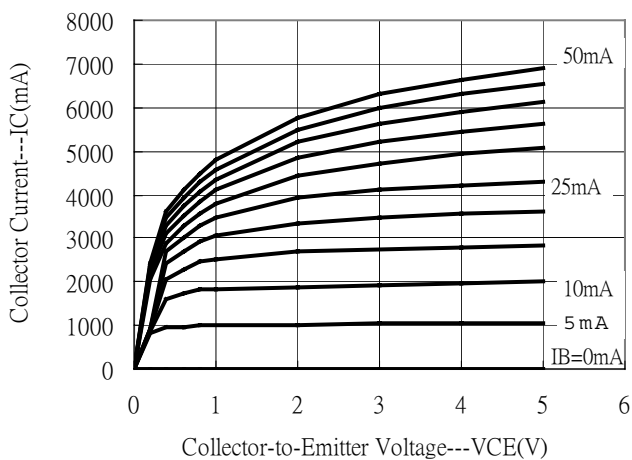
Saturation Voltage vs Collector Current



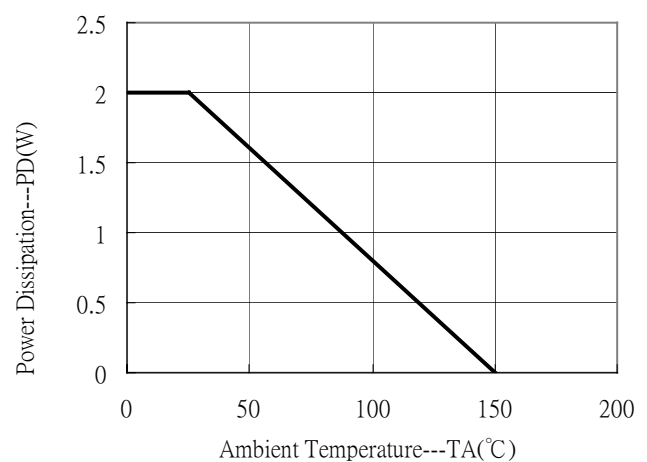
Grounded Emitter Output Characteristics



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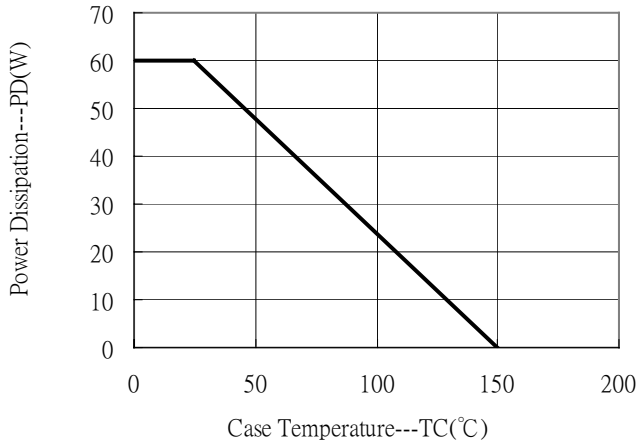
Power Derating Curve



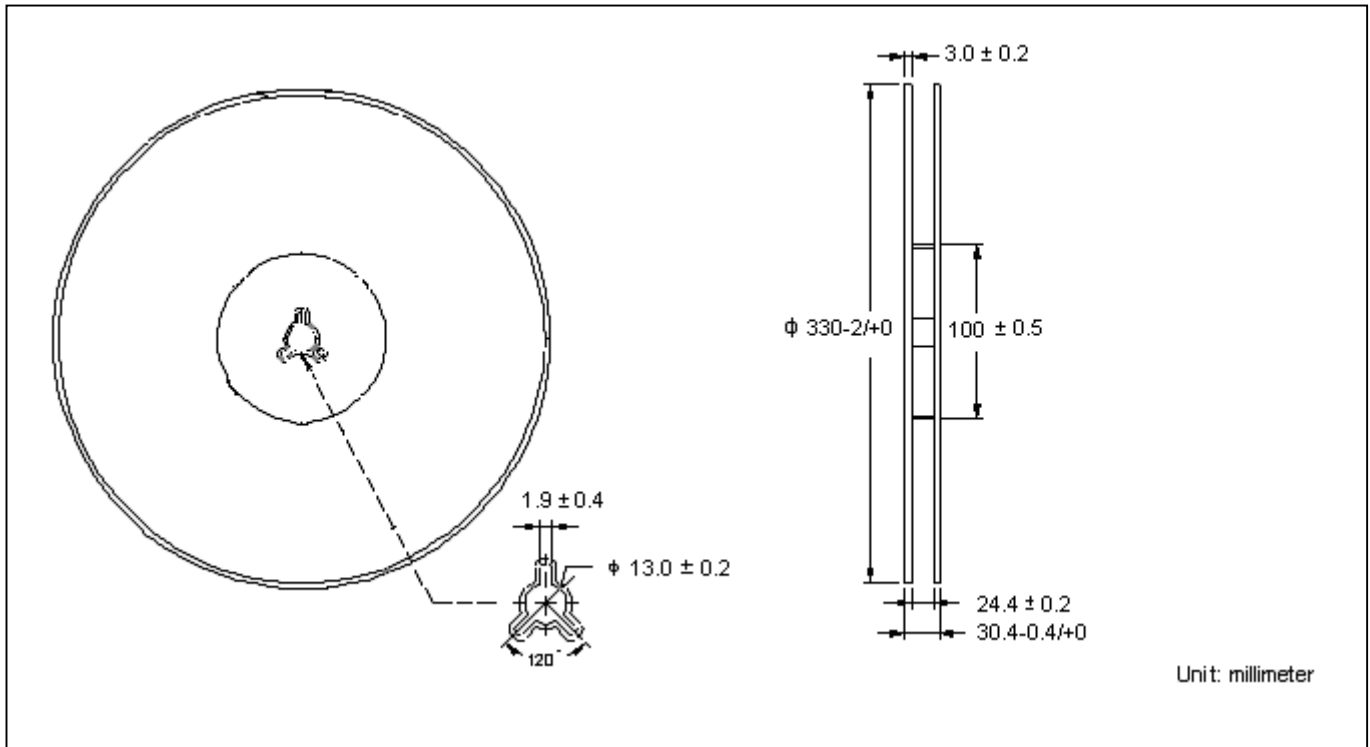


Typical Characteristics(Cont.)

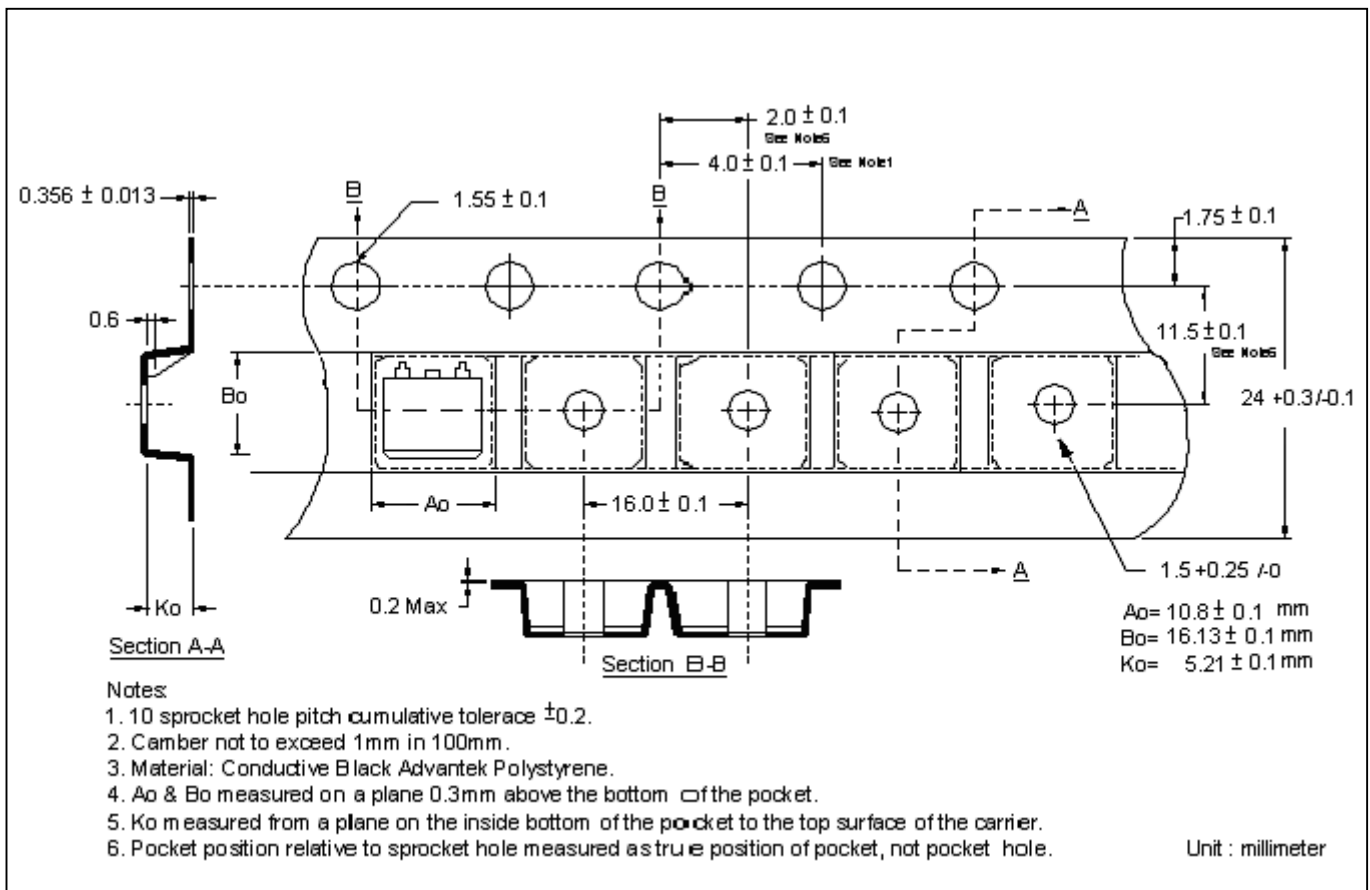
Power Derating Curve



Reel Dimension



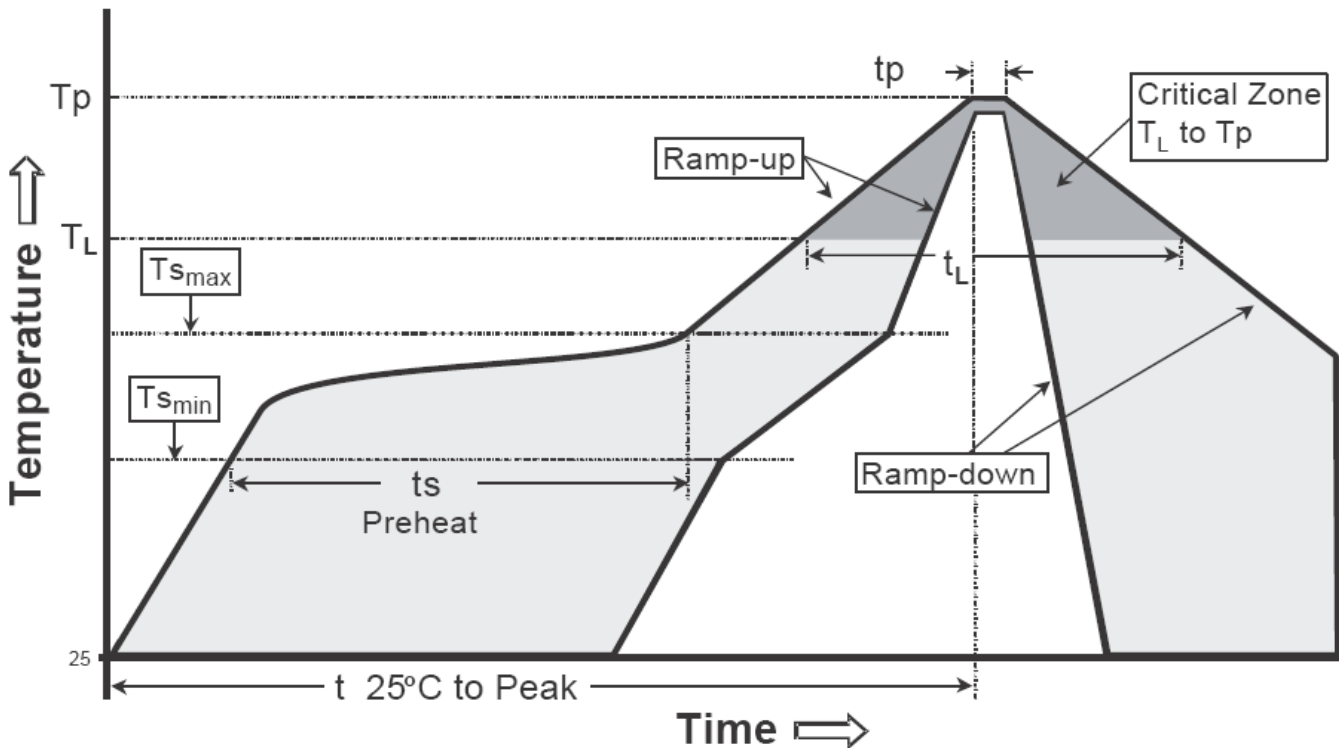
Carrier Tape Dimension



Recommended wave soldering condition

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

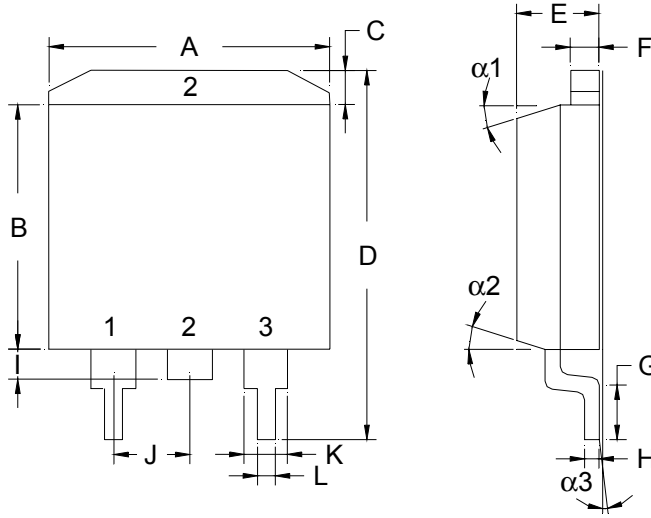
Recommended temperature profile for IR reflow



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.

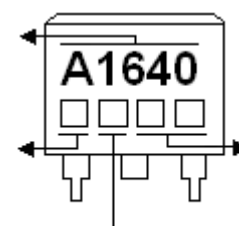
Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-263 Dimension



The diagram shows two views of the TO-263 package. The left view is a top-down perspective showing dimensions A (width), B (height), C (lead height), D (total height), J (lead width), K (lead spacing), and L (lead length). The right view is a side profile showing dimensions E (lead width), F (lead thickness), G (lead length), and H (lead height). Lead angles are labeled as $\alpha 1$, $\alpha 2$, and $\alpha 3$.

Marking :



Device Name ← **A1640**

Year Code:
 9→2009, 0→2010, ..., etc ←

Month Code:
 1→Jan, 2→Feb, ..., 9→Sep, A→Oct, B→Nov, C→Dec ←

Lot No.: 01~99 →

Style : Pin 1.Base 2.Collector 3.Emitter

3-Lead Plastic Surface Mounted Package
 CYStek Package Code : F3

*: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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