

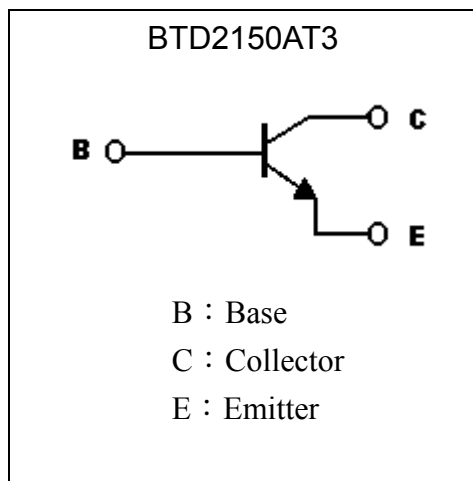
Low Vcesat NPN Epitaxial Planar Transistor

BTD2150AT3

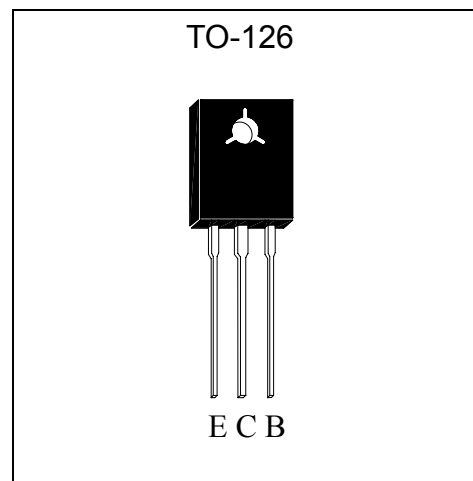
Features

- Low $V_{CE(sat)}$, $V_{CE(sat)}=0.25\text{ V}$ (typical), at $I_C / I_B = 2A / 200mA$
- Excellent current gain characteristics
- Complementary to BTB1424AT3
- Pb-free lead plating and halogen-free package

Symbol

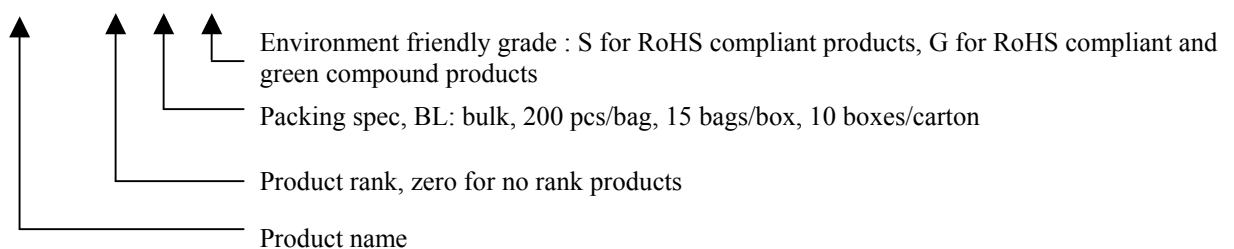


Outline



Ordering Information

Device	Package	Shipping
BTD2150AT3-X-BL-X	TO-18 (Pb-free lead plating package)	200 pcs / bag, 3,000 pcs/box , 30,000 pcs/carton





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current (DC)	I _C	4	A
Collector Current (Pulse)	I _{CP}	7 (Note)	
Power Dissipation (T _A =25°C)	P _D	1	W
Power Dissipation (T _C =25°C)		10	
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55~+150	°C

Note : Pulse test, pulse width ≤ 380μs, duty cycle ≤ 2%.

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{th,j-c}	12.5	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	125	°C/W

Characteristics (Ta=25°C)

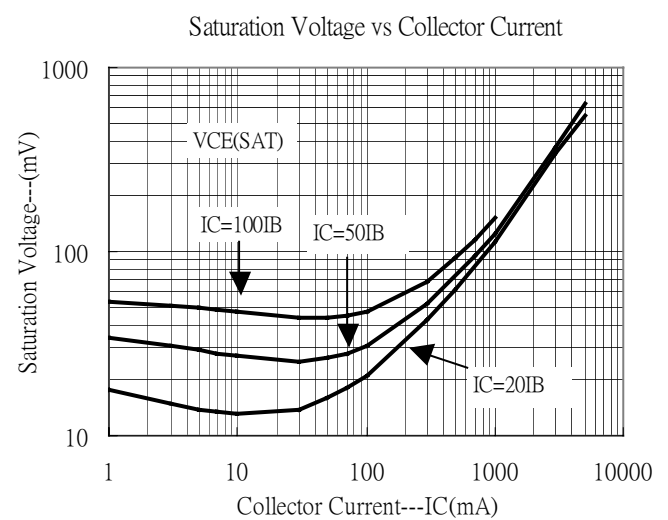
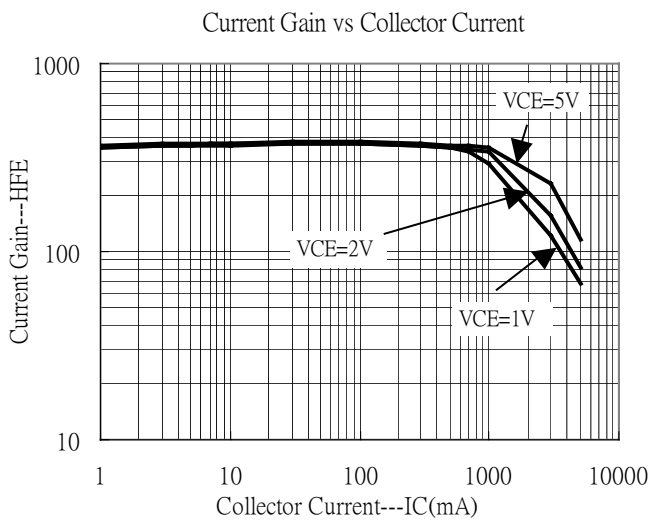
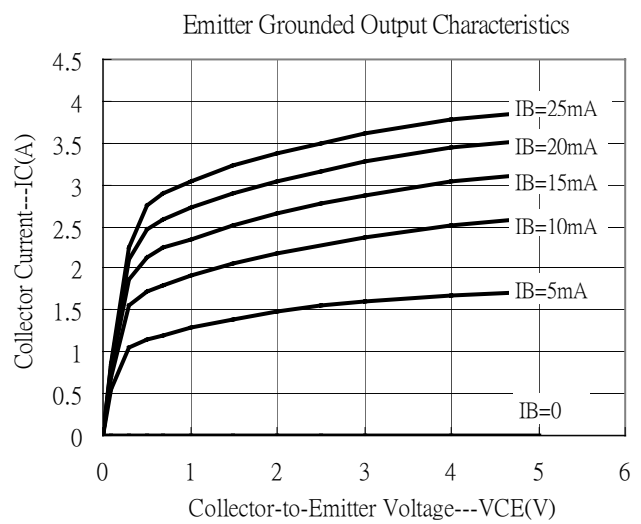
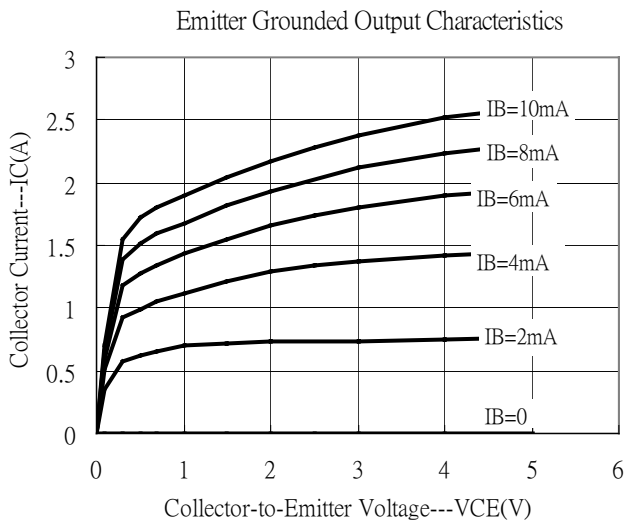
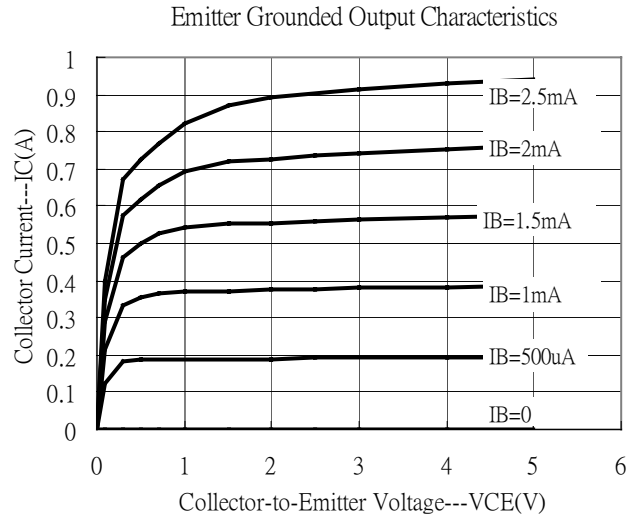
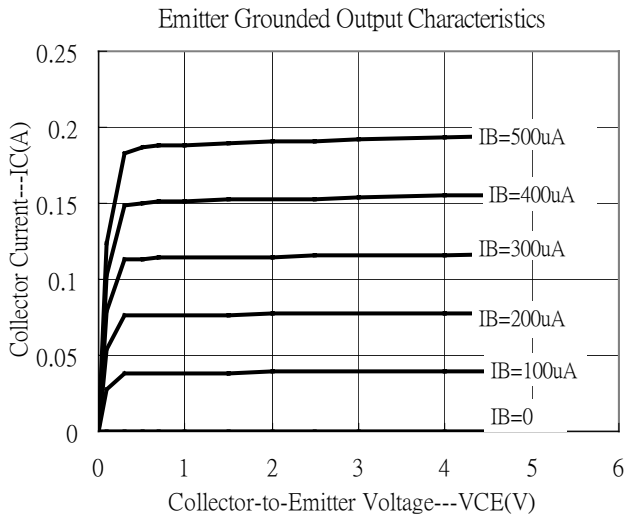
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	50	-	-	V	I _C =50μA, I _E =0
BV _{CEO}	50	-	-	V	I _C =1mA, I _B =0
BV _{EBO}	5	-	-	V	I _E =50μA, I _C =0
I _{CBO}	-	-	1	μA	V _{CB} =40V, I _E =0
I _{EBO}	-	-	1	μA	V _{EB} =5V, I _C =0
*V _{CE(sat)}	-	0.25	0.5	V	I _C =2A, I _B =200mA
*V _{BE(sat)}	-	-	2	V	I _C =2A, I _B =200mA
*h _{FE1}	200	-	-	-	V _{CE} =2V, I _C =20mA
*h _{FE2}	270	-	820	-	V _{CE} =2V, I _C =500mA
*h _{FE3}	180	-	-	-	V _{CE} =2V, I _C =1A
f _T	-	90	-	MHz	V _{CE} =5V, I _C =100mA, f=100MHz
C _{ob}	-	13	-	pF	V _{CB} =10V, f=1MHz

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

Classification Of hFE 2

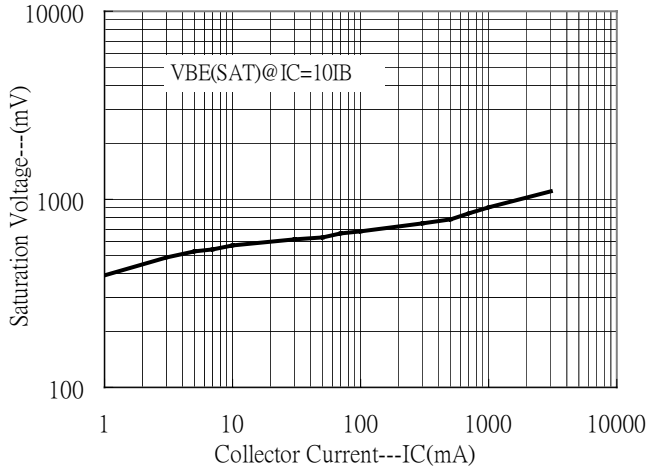
Rank	S	T
Range	270~560	390~820

Typical Characteristics

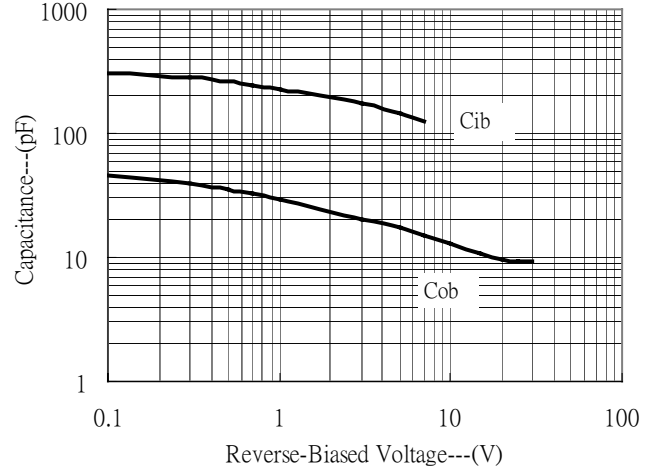


Typical Characteristics(Cont.)

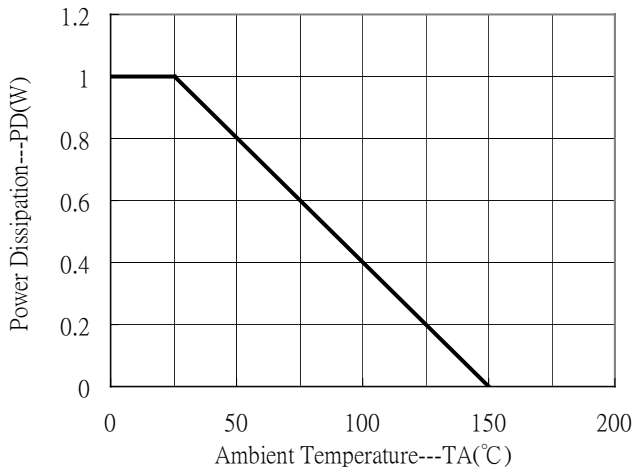
Saturation Voltage vs Collector Current



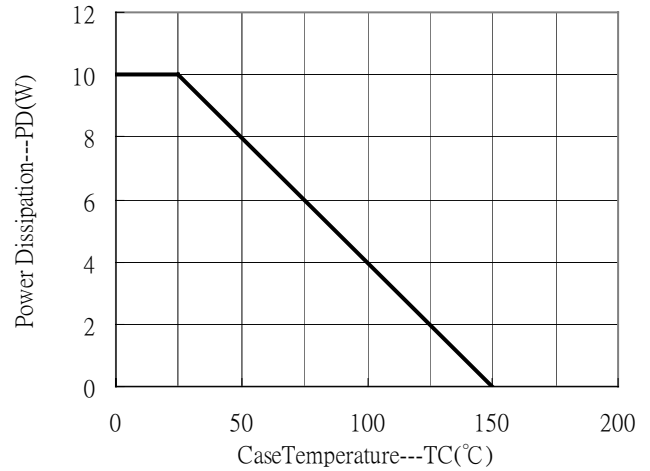
Capacitance vs Reverse-Biased Voltage



Power Derating Curve



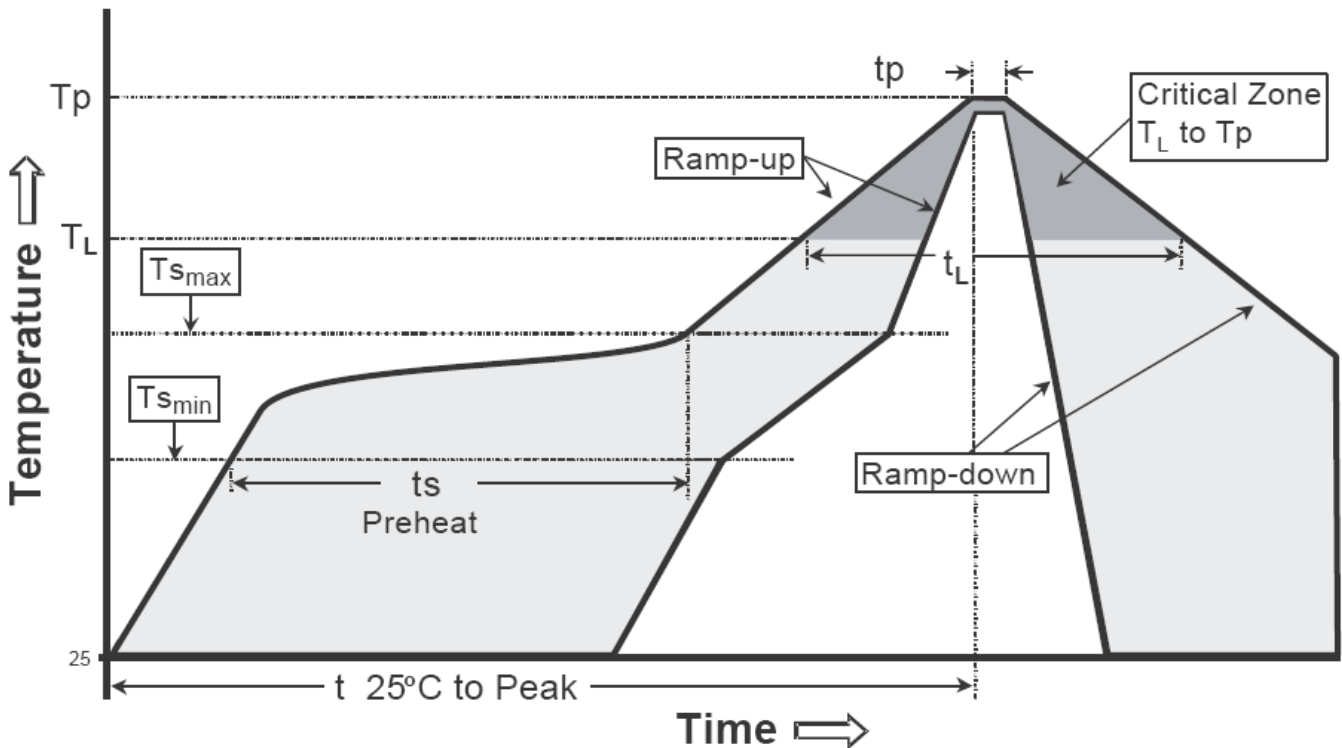
Power Derating Curve



Recommended wave soldering condition

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

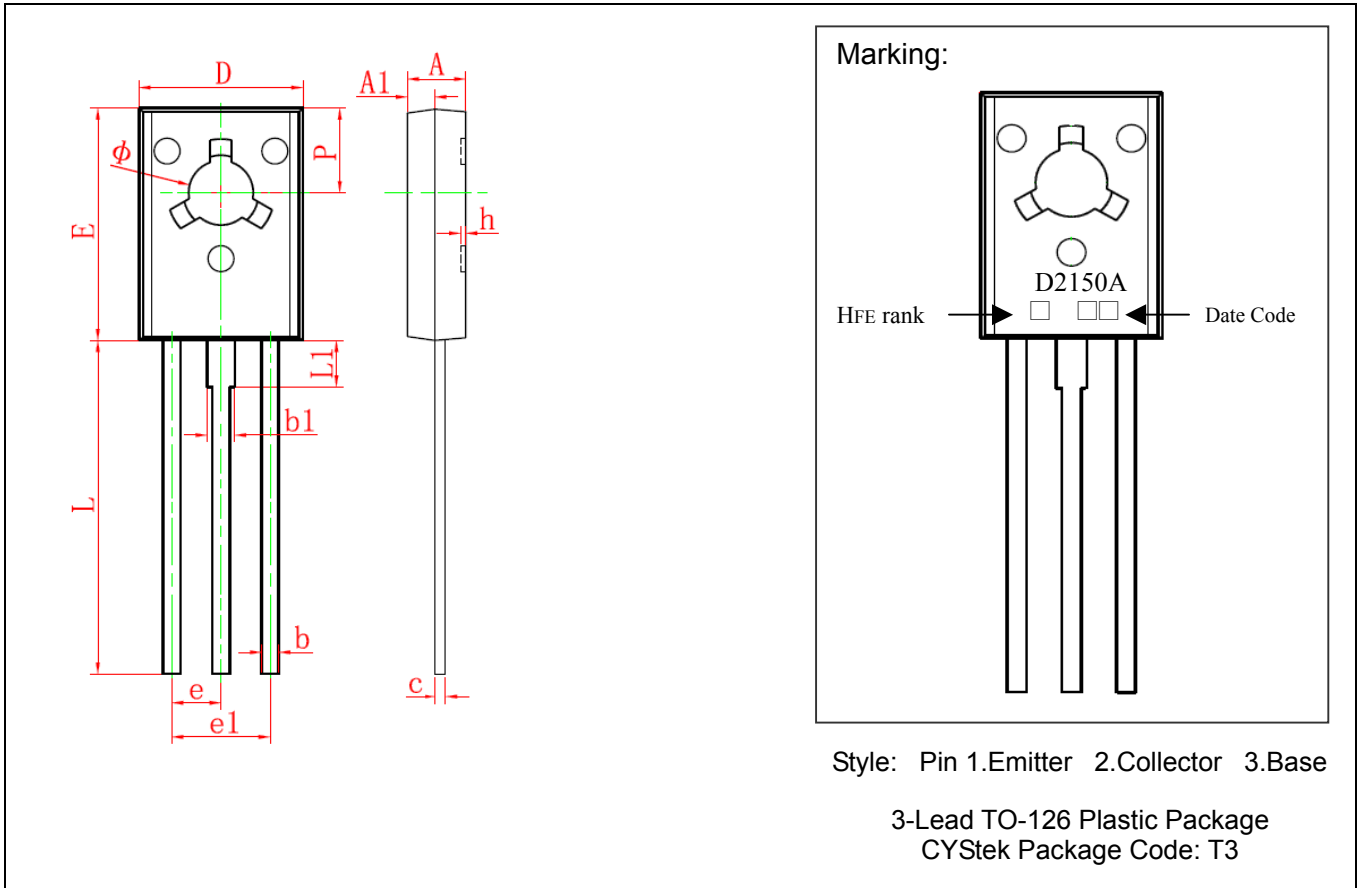
Recommended temperature profile for IR reflow



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.

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

TO-126 Dimension



Marking:

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

3-Lead TO-126 Plastic Package
 CYStek Package Code: T3

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	2.500	2.900	0.098	0.114	e	*2.290		*0.090	
A1	1.100	1.500	0.043	0.059	e1	4.480	4.680	0.176	0.184
b	0.660	0.860	0.026	0.034	h	0.000	0.300	0.000	0.012
b1	1.170	1.370	0.046	0.054	L	15.300	15.700	0.602	0.618
c	0.450	0.600	0.018	0.024	L1	2.100	2.300	0.083	0.091
D	7.400	7.800	0.291	0.307	P	3.900	4.100	0.154	0.161
E	10.600	11.000	0.417	0.433	Φ	3.000	3.200	0.118	0.126

- 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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