

NPN Epitaxial Planar Transistor

BU941ZR3

BV_{CEO}	350V
I_C	15A
$V_{CESAT(MAX)}$	2V @12A

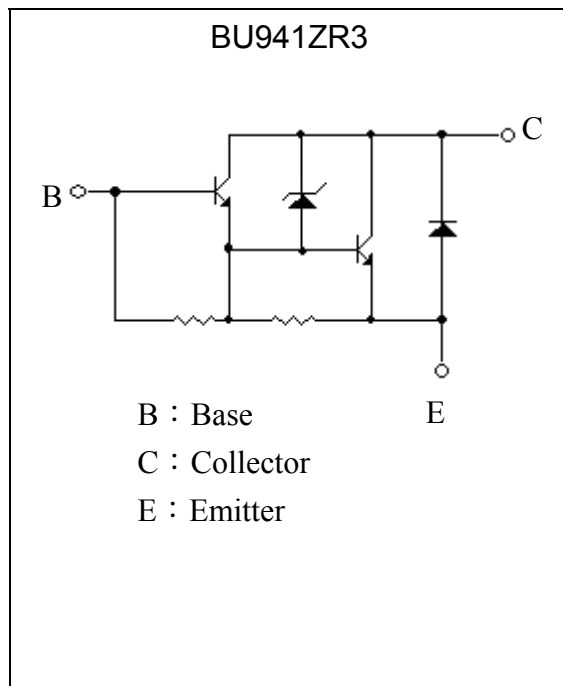
Features

- High BV_{CEO}
- Low $V_{CE(SAT)}$
- High current capability
- Built-in clamping zener
- Pb-free lead plating package

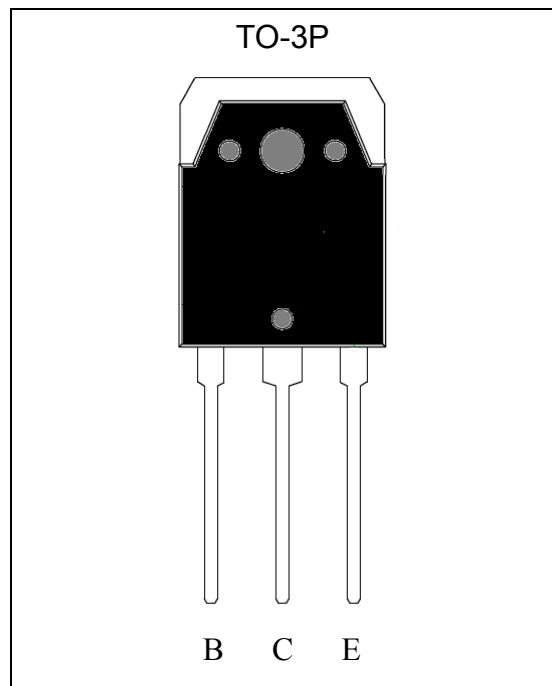
Applications

- High ruggedness electronic ignitions

Equivalent Circuit



Outline



**Absolute Maximum Ratings** (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CBO}	350	V
Collector-Emitter Voltage	V _{CEO}	350	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _{C(DC)}	15	A
	I _{C(Pulse)}	30 *1	
Base Current	I _{B(DC)}	1	A
	I _{B(Pulse)}	5 *1	
Power Dissipation @ T _c =25°C	P _D	155	W
Thermal Resistance, Junction to Case	R _{θJC}	0.97	°C/W
Junction Temperature	T _j	175	°C
Storage Temperature	T _{stg}	-65~+175	°C

Note : *1. Single Pulse tp<5ms

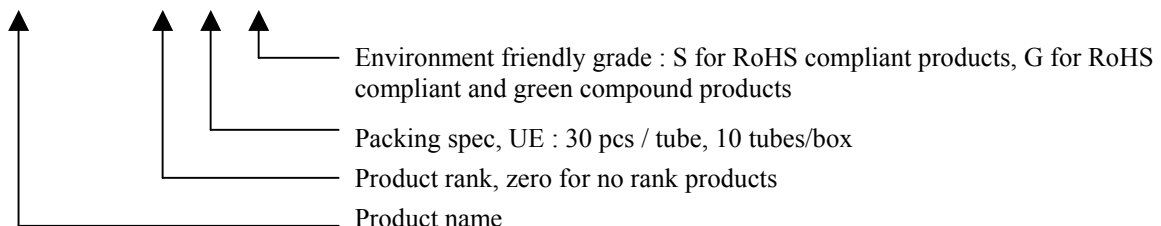
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	350	-	-	V	I _C =1mA, I _E =0
BV _{CEO}	350	-	-	V	I _C =100mA, I _B =0
I _{CEO}	-	-	100	μA	V _{CE} =300V, I _E =0
I _{CBO}	-	-	100	μA	V _{CB} =300V, I _E =0
I _{EBO}	-	-	20	mA	V _{EB} =5V, I _C =0
*V _{CE(sat)} 1	-	-	1.8	V	I _C =8A, I _B =100mA
*V _{CE(sat)} 2	-	-	1.8	V	I _C =10A, I _B =250mA
*V _{CE(sat)} 3	-	-	2	V	I _C =12A, I _B =300mA
*V _{BE(sat)} 1	-	-	2.2	V	I _C =8A, I _B =100mA
*V _{BE(sat)} 2	-	-	2.5	V	I _C =10A, I _B =250mA
*V _{BE(sat)} 3	-	-	2.7	V	I _C =12A, I _B =300mA
*V _{FEC}	-	-	2.5	V	I _C =10A
*h _{FE} 1	300	-	-	-	V _{CE} =10V, I _C =5A
*h _{FE} 2	100	-	-	-	V _{CE} =10V, I _C =8A

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

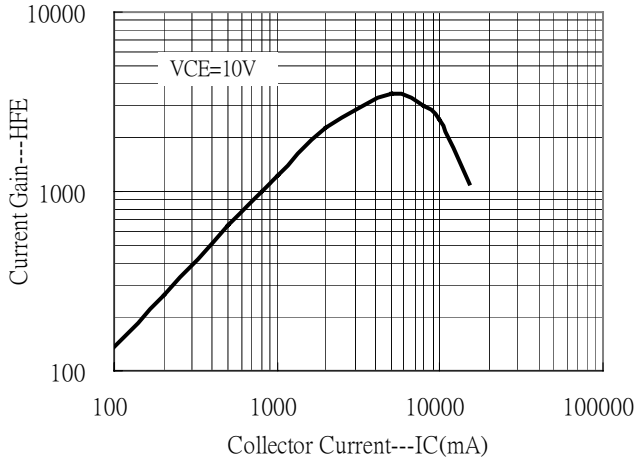
Ordering Information

Device	Package	Shipping
BU941ZR3-0-UE-S	TO-3P (Pb-free lead plating package)	30 pcs / tube, 10 tubes/ box , 10 boxes/carton

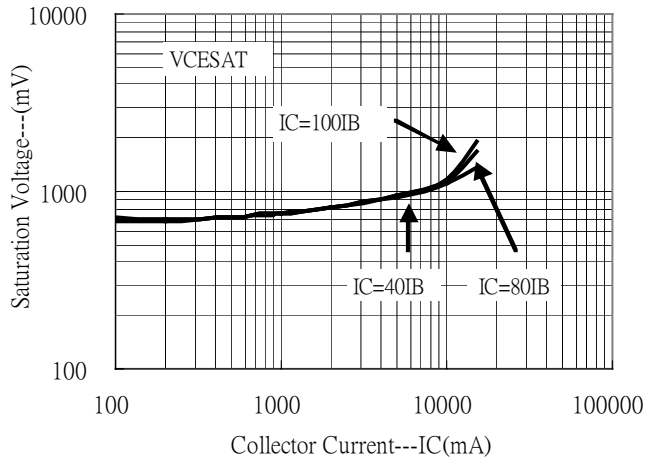


Typical Characteristics

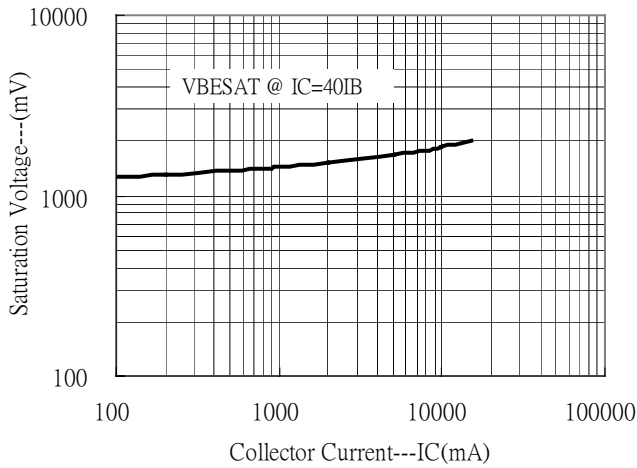
Current Gain vs Collector Current



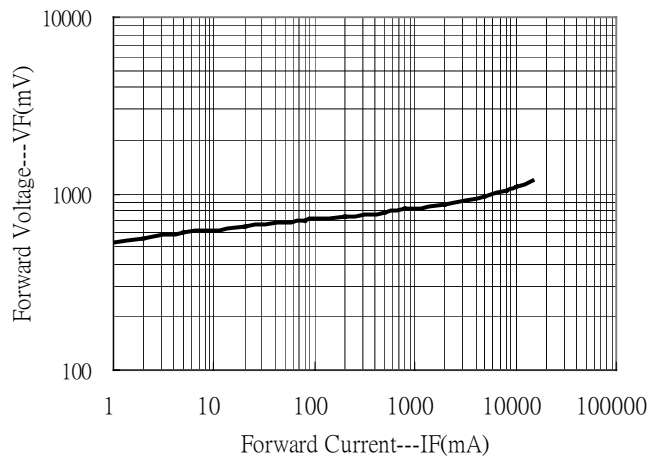
Saturation Voltage vs Collector Current



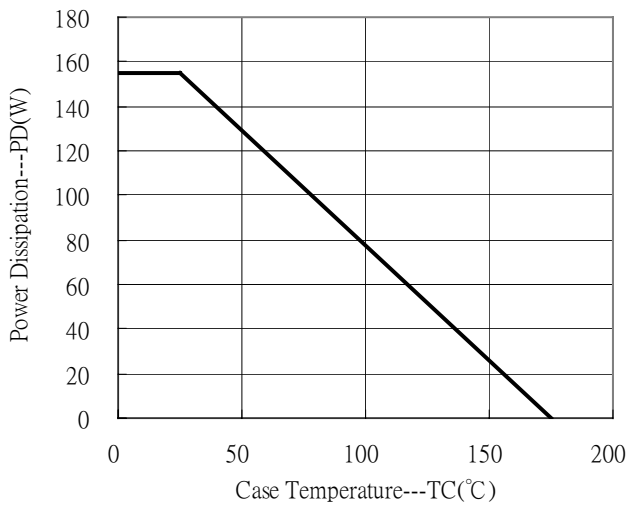
Saturation Voltage vs Collector Current



Built-in Diode Forward Characteristics



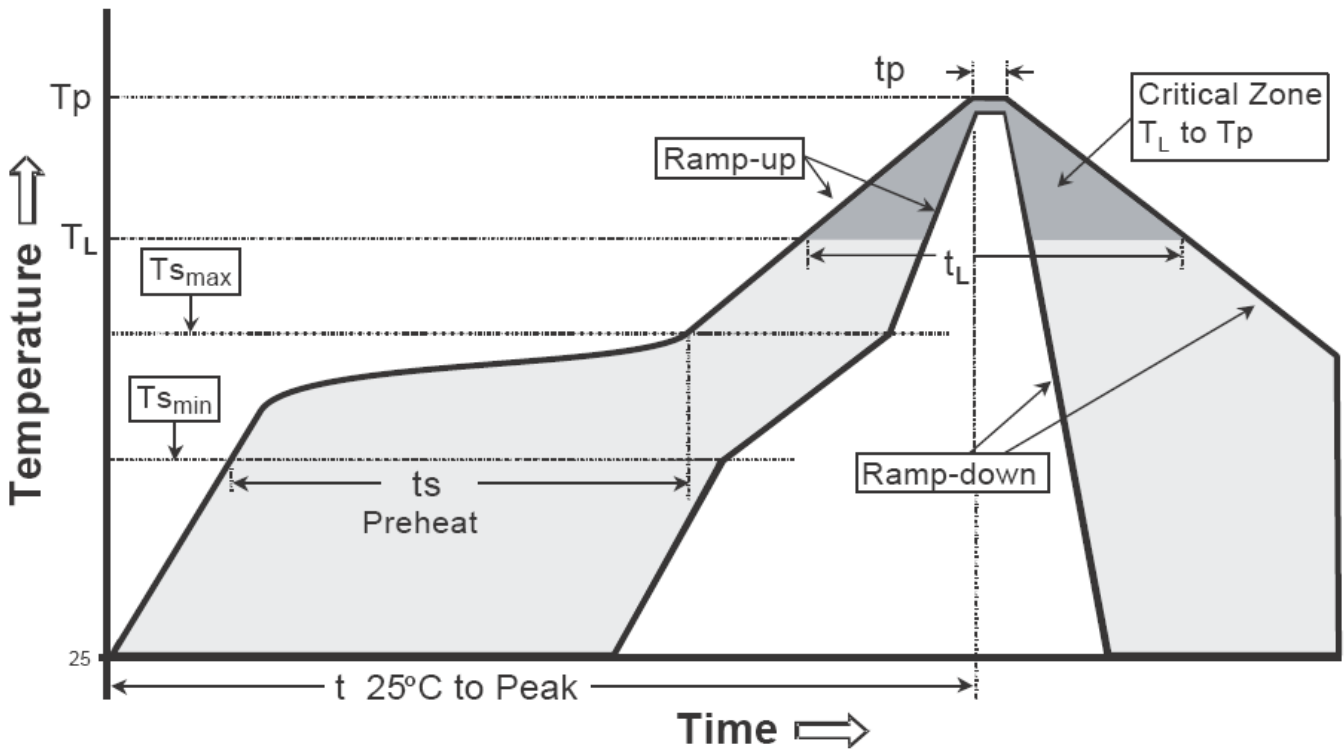
Power Derating Curve



Recommended wave soldering condition

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

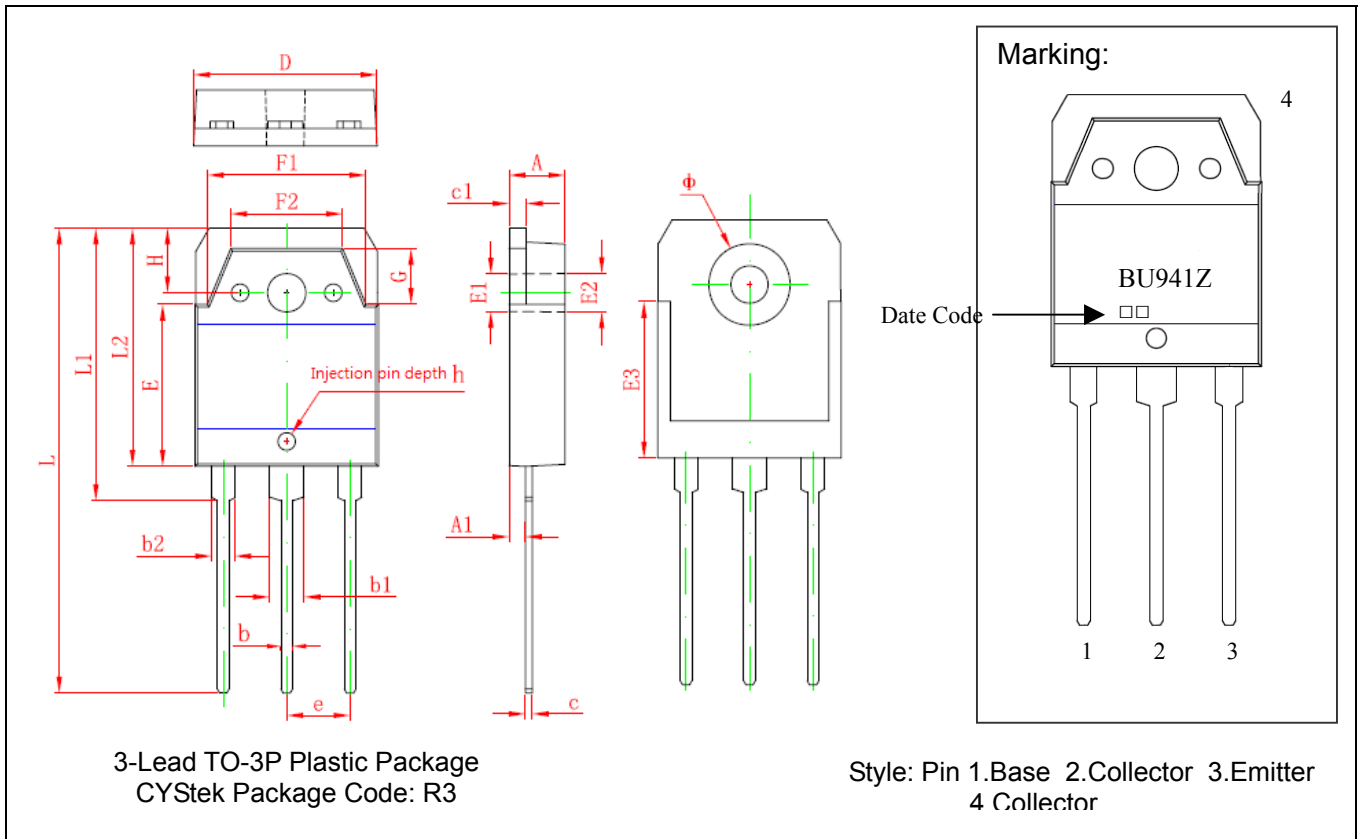
Recommended temperature profile for IR reflow



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-3P Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.600	5.000	0.181	0.197	E3	13.450 REF		0.530	REF
A1	1.200	1.600	0.047	0.063	F1	13.400	13.800	0.528	0.543
b	0.800	1.200	0.031	0.047	F2	9.400	9.800	0.370	0.386
b1	2.800	3.200	0.110	0.126	L	39.900	40.300	1.571	1.587
b2	1.800	2.200	0.071	0.087	L1	23.200	23.600	0.913	0.929
c	0.500	0.700	0.020	0.028	L2	20.300	20.600	0.799	0.811
c1	1.450	1.650	0.057	0.065	Φ	6.900	7.100	0.272	0.280
D	15.450	15.850	0.606	0.622	G	5.150	5.550	0.203	0.219
E	13.700	14.100	0.539	0.555	e	5.450 TYP		0.215 TYP	
E1	3.200 REF		0.126 REF		H	5.000 REF		0.197 REF	
E2	3.300 REF		0.130 REF		h	0.000	0.300	0.000	0.012

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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