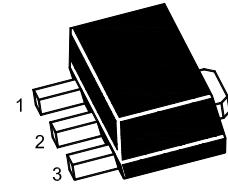


# 2SD1616AU

## NPN Silicon Epitaxial Planar Transistor

The transistor is subdivided into three groups Y, G and L, according to its DC current gain



1.Base 2.Collector 3.Emitter  
SOT-89 Plastic Package

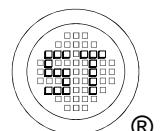
### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	120	V
Collector Emitter Voltage	$V_{CEO}$	60	V
Emitter Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	1	A
Peak Collector Current ( $PW \leq 10\text{ ms}$ )	$I_{CM}$	2	A
Power Dissipation	$P_{tot}$	0.75	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance - Junction to Ambient <sup>1)</sup>	$R_{\theta JA}$	167	$^\circ\text{C/W}$

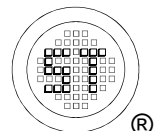
<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



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## Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$	Current Gain Group Y G L  $h_{FE}$	135	270	-
		200	400	-
		300	600	-
at $V_{CE} = 2\text{ V}$ , $I_C = 1\text{ A}$		81	-	-
Collector Base Cutoff Current at $V_{CB} = 120\text{ V}$	$I_{CBO}$	-	100	nA
Emitter Base Cutoff Current at $V_{EB} = 6\text{ V}$	$I_{EBO}$	-	100	nA
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	120	-	V
Collector Emitter Breakdown Voltage at $I_C = 10\text{ mA}$	$V_{(BR)CEO}$	60	-	V
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at $I_C = 1\text{ A}$ , $I_B = 50\text{ mA}$	$V_{CE(sat)}$	-	300	mV
Base Emitter Saturation Voltage at $I_C = 1\text{ A}$ , $I_B = 50\text{ mA}$	$V_{BE(sat)}$	-	1.2	V
Base Emitter Turn-On Voltage at $V_{CE} = 2\text{ V}$ , $I_C = 50\text{ mA}$	$V_{BE(on)}$	600	700	mV
Gain Bandwidth Product at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$	$f_T$	100	-	MHz
Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	19	pF



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## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

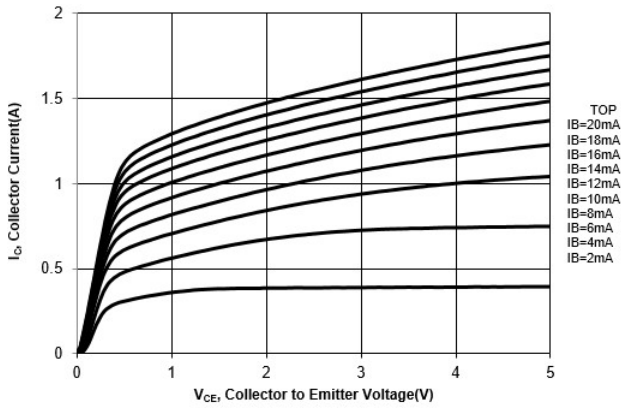


Fig. 2 Collector Current vs. Base to Emitter Voltage

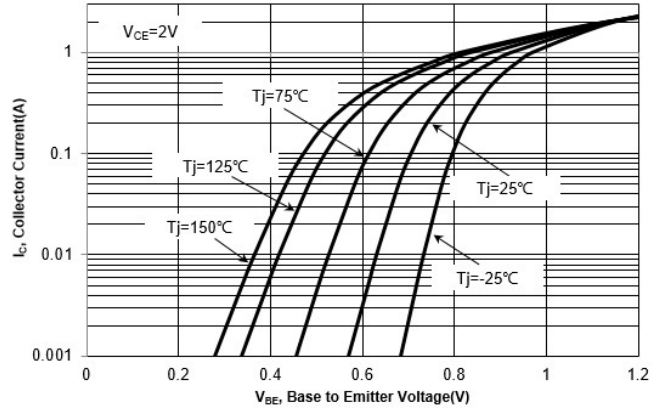


Fig. 3 DC Current Gain vs. Collector Current

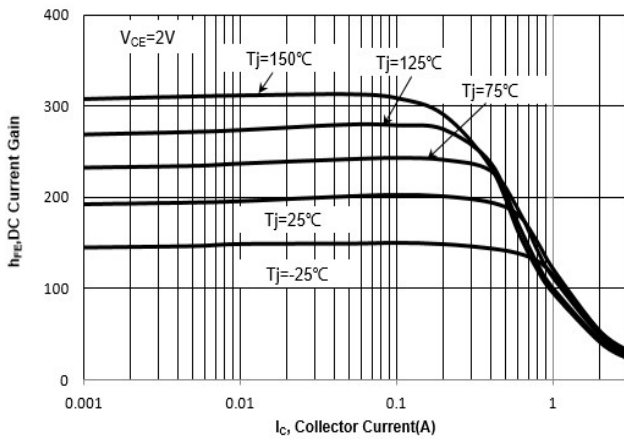
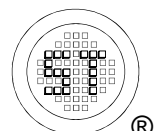
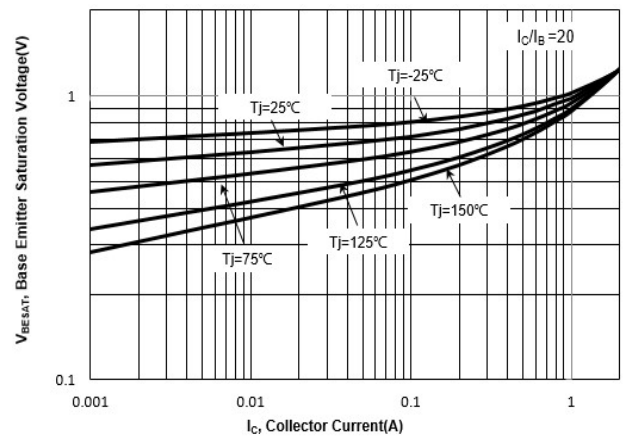


Fig. 4 V\_BESAT vs. Collector Current



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## Electrical Characteristics Curves

Fig. 5  $V_{CESAT}$  vs. Collector Current

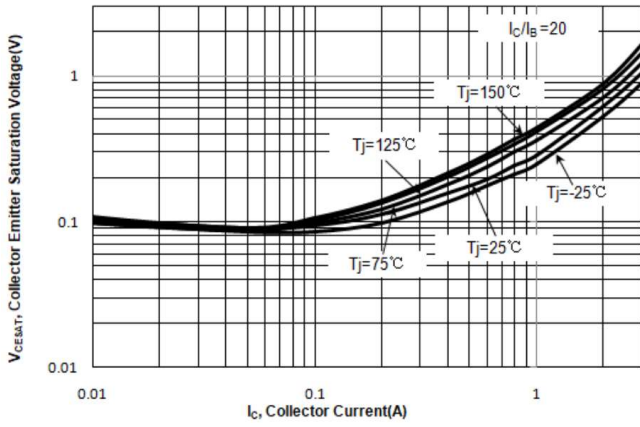


Fig. 6 Output Capacitance

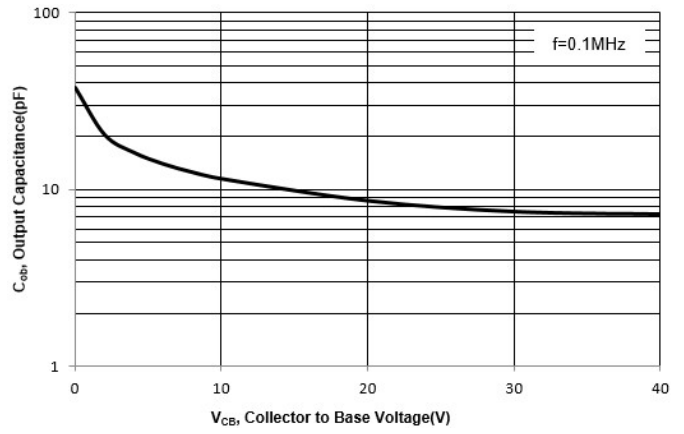
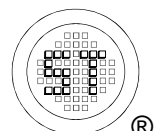
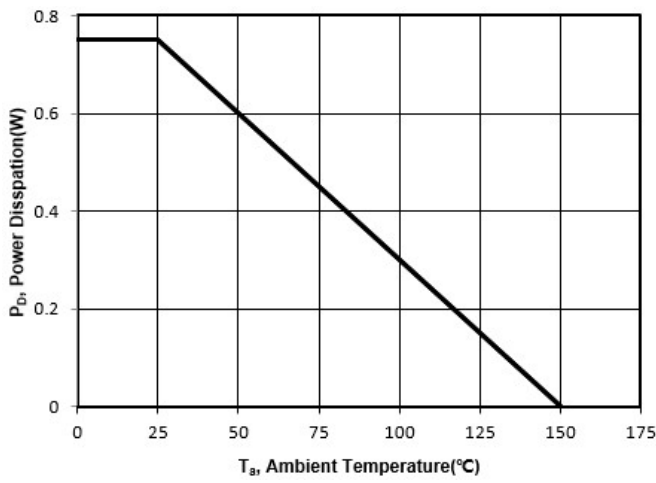


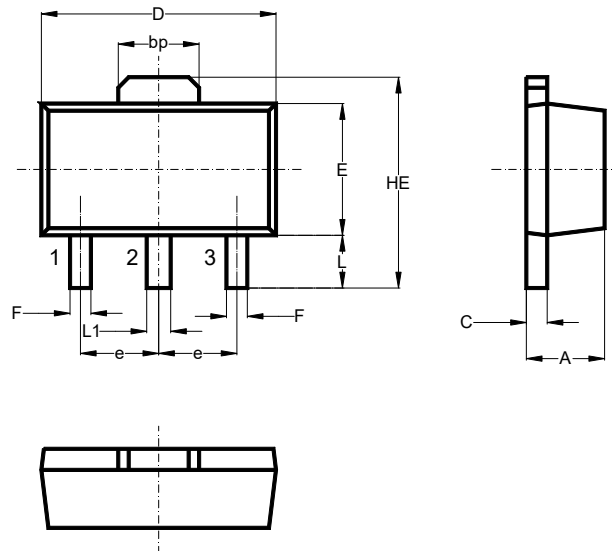
Fig. 7 Power Derating Curve



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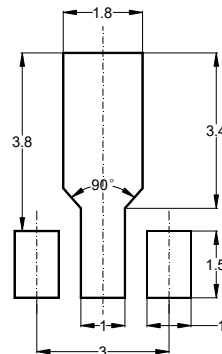
## Package Outline (Dimensions in mm)

SOT-89



Unit	A	bp	C	D	E	F	HE	e	L	L1
mm	1.6	1.60	0.5	4.6	2.6	0.45	4.25	1.5	1.05	0.51
	1.4	1.50	0.3	4.4	2.4	0.35	3.75	typ.	0.95	0.41

## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-89	12	8 ± 0.1	0.315 ± 0.004	178	7	1,000
				330	13	4,000

## Marking information

" 2SD1616A\*U " = Part No. (" \* " = HFE Current Gain Group )

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

