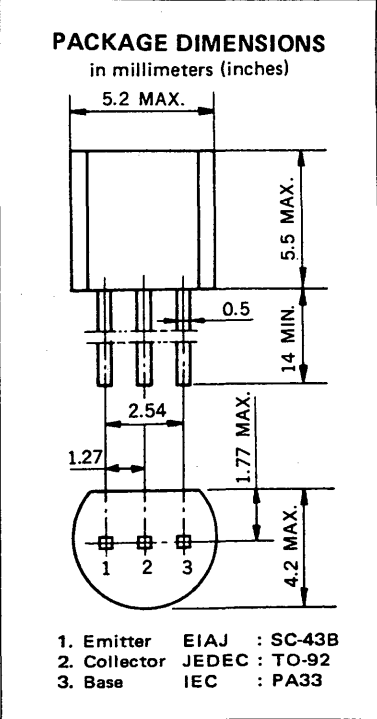


**DESCRIPTION** The 2SC3616 is designed for general-purpose applications requiring High DC Current Gain. This is suitable for all kind of driving, instead of Darlington Transistor, or muting.

- FEATURES**
- High DC Current Gain.  
 $h_{FE} = 800$  to  $3200$  (@  $V_{CE} = 2.0$  V,  $I_C = 300$  mA)
  - Low Collector Saturation Voltage.  
 $V_{CE(sat)} = 0.14$  V TYP. (@  $I_C/I_B = 300$  mA/3.0 mA)
  - High  $V_{EBO}$  :  $V_{EBO} = 15$  V
  - Large Current :  $I_{C(DC)} = 700$  mA,  $I_{C(pulse)} = 1.0$  A
  - High Total Power Dissipation. :  $P_T = 0.75$  W ( $T_a = 25^\circ\text{C}$ )

**ABSOLUTE MAXIMUM RATINGS**

- Maximum Temperatures
- Storage Temperature . . . . .  $-55$  to  $+150^\circ\text{C}$
  - Junction Temperature . . . . .  $150^\circ\text{C}$  Maximum
- Maximum Power Dissipation ( $T_a = 25^\circ\text{C}$ )
- Total Power Dissipation . . . . .  $0.75$  W
- Maximum Voltages and Currents ( $T_a = 25^\circ\text{C}$ )
- $V_{CBO}$  Collector to Base Voltage . . . . .  $25$  V
  - $V_{CEO}$  Collector to Emitter Voltage . . . . .  $25$  V
  - $V_{EBO}$  Emitter to Base Voltage . . . . .  $15$  V
  - $I_C$  Collector Current (DC) . . . . .  $700$  mA
  - $I_C$  Collector Current (pulse)\* . . . . .  $1.0$  A
- \*PW  $\leq 10$  ms, Duty Cycle  $\leq 50\%$



**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$h_{FE1}^{**}$	DC Current Gain	800		3200	—	$V_{CE} = 2.0$ V, $I_C = 300$ mA
$h_{FE2}^{**}$	DC Current Gain	640			—	$V_{CE} = 2.0$ V, $I_C = 500$ mA
$f_T$	Gain Bandwidth Product	150	250		MHz	$V_{CE} = 5.0$ V, $I_E = -300$ mA
$C_{ob}$	Output Capacitance		10		pF	$V_{CB} = 10$ V, $I_E = 0$ , $f = 1.0$ MHz
$I_{CBO}$	Collector Cutoff Current			100	nA	$V_{CB} = 25$ V, $I_E = 0$
$I_{EBO}$	Emitter Cutoff Current			100	nA	$V_{EB} = 10$ V, $I_C = 0$
$V_{BE}^{**}$	Base to Emitter Voltage	600		700	mV	$V_{CE} = 2.0$ V, $I_C = 50$ mA
$V_{CE(sat)}^{**}$	Collector Saturation Voltage		0.14	0.3	V	$I_C = 300$ mA, $I_B = 3.0$ mA
$V_{BE(sat)}^{**}$	Base Saturation Voltage		0.77	1.2	V	$I_C = 300$ mA, $I_B = 3.0$ mA
$t_{on}$	Turn-On Time		0.13		$\mu\text{s}$	$(V_{CC} = 10$ V, $V_{BE(off)} \doteq -2.7$ V) $I_C = 200$ mA $I_{B1} = -I_{B2} = 4.0$ mA
$t_{stg}$	Storage Time		0.90		$\mu\text{s}$	
$t_{off}$	Turn-Off Time		1.1		$\mu\text{s}$	

\*\*Pulsed PW  $\leq 350$   $\mu\text{s}$ , Duty Cycle  $\leq 2\%$

**Classification of  $h_{FE1}$**

Rank	M	L	K
Range	800 to 1600	1200 to 2400	2000 to 3200

Test Conditions:  $V_{CE} = 2.0$  V,  $I_C = 300$  mA

TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

