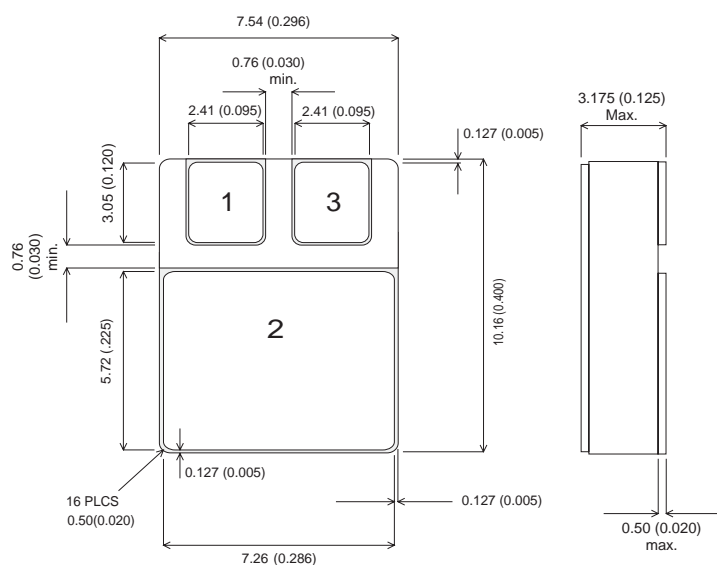


**MECHANICAL DATA**

Dimensions in mm (inches)

**SILICON POWER NPN  
DARLINGTON TRANSISTOR**



**FEATURES**

- High Gain Darlington Performance

**APPLICATIONS**

- Audio Amplifiers
- Hammer Drivers
- Shunt and Series Regulators

**SMD05 (TO-276AA)**

Pad 1 – Base    Pad 2 – Collector    Pad 3 – Emitter

**ABSOLUTE MAXIMUM RATINGS**( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{CEO}$	Collector – Emitter Voltage	80V
$V_{CEX}$	Collector – Emitter Voltage	80V
$V_{CBO}$	Collector – Base Voltage	80V
$V_{EBO}$	Emitter – Base Voltage	5V
$I_C$	Continuous Collector Current	10A
$I_{CM}$	Peak Collector Current	15A
$I_B$	Base Current - Continuous	0.25A
$P_{tot}$	Total Dissipation at $T_{case} = 25^{\circ}C$	100W
	Derate above $25^{\circ}C$	0.571W/ $^{\circ}C$
$T_{STG}, T_J$	Operating and Storage Junction Temperature Range(2)	-65 to +200 $^{\circ}C$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>OFF CHARACTERISTICS</b>						
$V_{CEO(BR)^*}$	Collector – Emitter Breakdown Voltage	$I_C = 200mA$	$I_B = 0$	80	V	
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = 80V$	$I_B = 0$		1.0 mA	
$I_{CEV}$	Collector Cut-off Current	$V_{CE} = V_{CEO(BR)}$	$V_{BE(off)} = 1.5V$ $T_C = 150^{\circ}C$		0.3 mA 3.0	
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5V$	$I_C = 0$		10 mA	
$V_{CER(BR)}$	Collector–Emitter Breakdown Voltage*	$R_{EB} = 100\Omega$	$I_C = 200mA$		80 V	
$V_{CEV(BR)}$	Collector–Emitter Breakdown Voltage*	$V_{BE(off)} = 1.5V$	$I_C = 200mA$		80	
<b>ON CHARACTERISTICS</b>						
$h_{FE}$	DC Current Gain	$V_{CE} = 3V$	$I_C = 5A$	1000	20000	—
		$V_{CE} = 3V$	$I_C = 10A$	100		—
$V_{CE(sat)}$	Collector – Emitter Saturation Voltage	$I_C = 5A$	$I_B = 0.01A$		2.0	V
		$I_C = 10A$	$I_B = 0.1A$		3.0	V
$V_{BE(on)}$	Base – Emitter On Voltage	$V_{CE} = 3V$	$I_C = 5A$		2.8	V
		$V_{CE} = 3V$	$I_C = 10A$		4.5	V
$V_F$	Diode Forward Voltage	$I_F = 10A$			4.0	V
<b>DYNAMIC CHARACTERISTICS</b>						
$C_{ob}$	Output Capacitance	$V_{CB} = 10V$	$I_E = 0$ $f_{test} = 1.0MHz$		200	pF
$ h_{fe} $	*Magnitude of Common Emitter Small Signal Short-Circuit	$V_{CE} = 5V$	$I_C = 1.0A$ $f = 1.0KHz$	20		—
$h_{fe}$	Common Emitter Small Signal Short-Circuit Forward	$V_{CE} = 5V$	$I_C = 1.0A$ $f = 1.0KHz$	1000		—
<b>SECOND BREAKDOWN</b>						
$E_{s/b}$	Energy with Base-Reverse Biased	$L = 12mH$ $V_{BE(off)} = 1.5V$	$R_{BE} = 100\Omega$ $I_C = 4.5A$	120		mJ

\* Pulse test  $t_p = 300\mu s$  , Duty Cycle  $\leq 2\%$