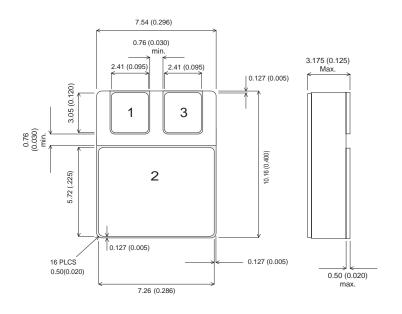




#### **MECHANICAL DATA**

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<sub>case</sub> = 25°C unless otherwise stated)

$\overline{V_{CEO}}$	Collector – Emitter Voltage	80V		
$V_{CEX}$	Collector – Emitter Voltage	80V		
$V_{CBO}$	Collector – Base Voltage	80V		
$V_{EBO}$	Emitter – Base Voltage	5V		
$I_{\mathbb{C}}$	Continuous Collector Current	10A		
$I_{CM}$	Peak Collector Current	15A		
$I_{B}$	Base Current - Continuous	0.25A		
$P_{tot}$	Total Dissipation at T <sub>case</sub> = 25°C	100W		
	Derate above 25°C	0.571W/°C		
$T_{STG}$ , $T_{J}$	Operating and Storage Junction Temperature Range(2)	−65 to +200°C		

Semelab PIc 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.

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612. E-mail: sales@semelab.co.uk

Website: http://www.semelab.co.uk

**Document Number 6387** 





## **ELECTRICAL CHARACTERISTICS** (T<sub>case</sub> = 25°C unless otherwise stated)

	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
	OFF CHARACTERISTICS			•			'
V <sub>CEO(BR)*</sub>	Collector – Emitter Breakdown	I <sub>C</sub> = 200mA	I <sub>B</sub> = 0	80			V
	Voltage						
I <sub>CEO</sub>	Collector Cut-off Current	V <sub>CE</sub> = 80V	I <sub>B</sub> = 0			1.0	mA
I <sub>CEV</sub>	Collector Cut-off Current	$V_{CE} = V_{CEO(BR)}$	$V_{BE(off)} = 1.5V$			0.3	mA
			T <sub>C</sub> = 150°C			3.0	
I <sub>EBO</sub>	Emitter Cut-off Current	$V_{EB} = 5V$	I <sub>C</sub> = 0			10	mA
V <sub>CER(BR)</sub>	Collector–Emitter Breakdown Voltage*	R <sub>EB</sub> =100Ω	I <sub>C</sub> = 200mA			80	- V
V <sub>CEV(BR)</sub>	Collector–Emitter Breakdown Voltage*	V <sub>BE(off)</sub> = 1.5V	I <sub>C</sub> = 200mA			80	
	ON CHARACTERISTICS	1				I	
h <sub>FE</sub>	DC Current Gain	V <sub>CE</sub> = 3V	I <sub>C</sub> = 5A	1000		20000	
		V <sub>CE</sub> = 3V	I <sub>C</sub> = 10A	100			1 —
V <sub>CE(sat)</sub>	Collector – Emitter	I <sub>C</sub> = 5A	$I_B = 0.01A$			2.0	V
	Saturation Voltage	I <sub>C</sub> = 10A	$I_{B} = 0.1A$			3.0	] V
V <sub>BE(on)</sub>	Base – Emitter On Voltage	V <sub>CE</sub> = 3V	I <sub>C</sub> = 5A			2.8	V
		V <sub>CE</sub> = 3V	I <sub>C</sub> = 10A			4.5	
V <sub>F</sub>	Diode Forward Voltage	I <sub>F</sub> = 10A				4.0	V
	DYNAMIC CHARACTERISTICS	•					
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> =10V	I <sub>E</sub> = 0			200	pF
			$f_{test} = 1.0MHz$				
Ih <sub>fe</sub> l	*Magnitude of Common Emitter	V <sub>CE</sub> = 5V	$I_{C} = 1.0A$	20			_
	Small Signal Short-Circuit		f = 1.0KHz				
h <sub>fe</sub>	Common Emitter Small Signal	V <sub>CE</sub> = 5V	I <sub>C</sub> = 1.0A	1000			
	Short-Circuit Forward		f = 1.0KHz	1000			
	SECOND BREAKDOWN	•					
E <sub>s/b</sub>	Energy with Base-Reverse Biased	L =12mH	$R_{BE} = 100\Omega$	120		mJ	
		$V_{BE(off)} = 1.5V$	$I_{C} = 4.5A$	120			

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

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.

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612. E-mail: sales@semelab.co.uk

Document Number 6387 Issue 1

Website: http://www.semelab.co.uk