



**COMPLEMENTARY DARLINGTON**

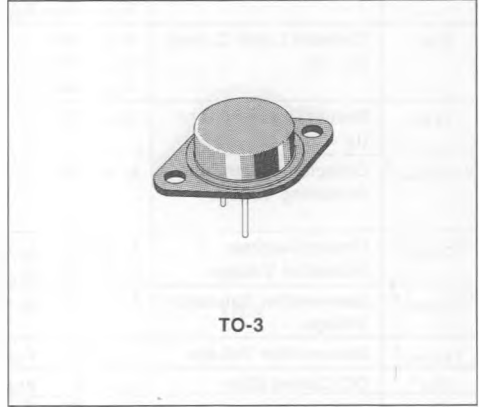
- HIGH GAIN
- HIGH CURRENT
- HIGH DISSIPATION

**DESCRIPTION**

The 2N6050, 2N6051 and 2N6052 are silicon epitaxial base PNP transistors in monolithic Darlington configuration mounted in Jedec TO-3 metal case.

They are intended for use in power linear and low frequency switching applications.

The complementary NPN types are the 2N6057, 2N6058 and 2N6059 respectively.



**INTERNAL SCHEMATIC DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	PNP NPN	Value			Unit
			2N6050 2N6057	2N6051 2N6058	2N6052 2N6059	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		60	80	100	V
$V_{CEX}$	Collector-emitter Voltage ( $V_{BE} = -1.5V$ )		60	80	100	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		60	80	100	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		5			V
$I_C$	Collector Current		12			A
$I_{CM}$	Collector Peak Current		20			A
$I_B$	Base Current		0.2			mA
$P_{Tot}$	Total Dissipation at $T_C < 25^\circ C$		150			W
$T_{stg}$	Storage Temperature		- 65 to 200			$^\circ C$
$T_J$	Max. Operating Junction Temperature		200			$^\circ C$

For PNP types voltage and current value are negative.

## THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	max	1.17	°C/W
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ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEX}$	Collector Cutoff Current	$V_{CE} = V_{CEX}$ $V_{BE} = -1.5\text{V}$ $V_{CE} = V_{CEX}$ $V_{BE} = -1.5\text{V}$ $T_c = 150^{\circ}\text{C}$			500 5	$\mu\text{A}$ mA
$I_{CEO}$	Collector Cutoff Current ( $I_B = 0$ )	$V_{CE} = 30\text{V}$ for <b>2N6050/57</b> $V_{CE} = 40\text{V}$ for <b>2N6051/58</b> $V_{CE} = 50\text{V}$ for <b>2N6052/59</b>			1 1 1	mA mA mA
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 5\text{V}$			2	mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage	$I_C = 0.1\text{A}$ for <b>2N6050/57</b> for <b>2N6051/58</b> for <b>2N6052/59</b>	60 80 100			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 6\text{A}$ $I_B = 24\text{mA}$ $I_C = 12\text{A}$ $I_B = 120\text{mA}$			2 3	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 12\text{A}$ $I_B = 120\text{mA}$			4	V
$V_{BE(on)}^*$	Base-emitter Voltage	$I_C = 6\text{A}$ $V_{CE} = 3\text{V}$			2.8	V
$h_{FE}^*$	DC Current Gain	$I_C = 6\text{A}$ $V_{CE} = 3\text{V}$ $I_C = 12\text{A}$ $V_{CE} = 3\text{V}$	750 100			
$f_T$	Transition Frequency	$I_C = 5\text{A}$ $V_{CE} = 3\text{V}$ $f = 1\text{MHz}$	4			MHz

\* Pulsed : pulse duration = 300 $\mu\text{s}$ , duty cycle = 1.5%.  
For PNP types voltage and current values are negative.