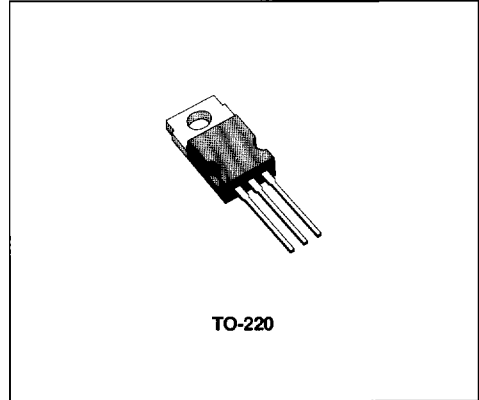


## POWER DARLINGTON TRANSISTORS

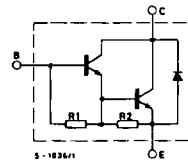
### DESCRIPTION

The 2N6386, 2N6387 and 2N6388 are silicon epitaxial-base NPN transistors in monolithic Darling-ton configuration and are mounted in Jedec TO-220 plastic package.

They are intended for use in low and medium fre-quency power applications.



### INTERNAL SCHEMATIC DIAGRAM



R1 Typ. 10k $\Omega$   
 R2 Typ. 150 $\Omega$

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	2N6386	2N6387	2N6388	Unit
$V_{CBO}$	Collector-base Voltage ( $I_B = 0$ )	40	60	80	V
$V_{CEV}$	Collector-emitter Voltage ( $V_{BE} = -1.5V$ )	40	60	80	V
$V_{CER}$	Collector-emitter Voltage ( $R_{BE} \leq 100\Omega$ )	40	60	80	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	40	60	80	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )	5	5	5	V
$I_C$	Collector Current	8	10	10	A
$I_{CM}$	Collector Peak Current	15			A
$I_B$	Base Current	250			mA
$P_{lot}$	Total Power Dissipation at $T_{case} \leq 25^\circ C$	65			W
$T_{stg}$	Storage Temperature	- 65 to 150			$^\circ C$
$T_j$	Junction Temperature	150			$^\circ C$

**THERMAL DATA**

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	1.92	°C/W
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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEV}$	Collector Cutoff Current ( $V_{BE} = -1.5V$ )	$V_{CE} = 40V$ for <b>2N6386</b> $V_{CE} = 60V$ for <b>2N6387</b> $V_{CE} = 80V$ for <b>2N6388</b> $T_{case} = 125^{\circ}C$ $V_{CE} = 40V$ for <b>2N6386</b> $V_{CE} = 60V$ for <b>2N6387</b> $V_{CE} = 80V$ for <b>2N6388</b>			0.3 0.3 0.3 3 3 3	mA mA mA mA mA mA
$I_{CEO}$	Collector Cutoff Current ( $I_B = 0$ )	$V_{CE} = 40V$ for <b>2N6386</b> $V_{CE} = 60V$ for <b>2N6387</b> $V_{CE} = 80V$ for <b>2N6388</b>			1 1 1	mA mA mA
$I_{EBO}$	Emitter-base Current ( $I_C = 0$ )	$V_{EB} = 5V$			5	mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 200mA$ for <b>2N6386</b> for <b>2N6387</b> for <b>2N6388</b>	40 60 80			V V V
$V_{CER(sus)}^*$	Collector-emitter Sustaining Voltage ( $R_{BE} = 100\Omega$ )	$I_C = 200mA$ for <b>2N6386</b> for <b>2N6387</b> for <b>2N6388</b>	40 60 80			V V V
$V_{CEV(sus)}^*$	Collector-emitter Sustaining Voltage ( $V_{BE} = -1.5V$ )	$I_C = 200mA$ for <b>2N6386</b> for <b>2N6387</b> for <b>2N6388</b>	40 60 80			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	for <b>2N6386</b> $I_C = 3A$ $I_B = 6mA$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 5A$ $I_B = 10mA$ for <b>2N6386</b> $I_C = 8A$ $I_B = 80mA$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 10A$ $I_B = 100mA$			2 2 3 3	V V V V
$V_{BE}^*$	Base-emitter Voltage	for <b>2N6386</b> $I_C = 3A$ $V_{CE} = 3V$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 5A$ $V_{CE} = 3V$ for <b>2N6386</b> $I_C = 8A$ $V_{CE} = 3V$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 10A$ $V_{CE} = 3V$			2.8 2.8 4.5 4.5	V V V V
$h_{FE}^*$	DC Current Gain	for <b>2N6386</b> $I_C = 3A$ $V_{CE} = 3V$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 5A$ $V_{CE} = 3V$ for <b>2N6386</b> $I_C = 8A$ $V_{CE} = 3V$ for <b>2N6387</b> and <b>2N6388</b> $I_C = 10A$ $V_{CE} = 3V$	1000 1000 100 100		20000 20000	

\* Pulsed : pulse duration = 300 $\mu$ s, duty cycle = 1.5%.

## ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$h_{fe}$	Small Signal Current Gain	$I_C = 1A$ $V_{CE} = 10V$ $f = 1MHz$ $V_{CE} = 10V$ $f = 1KHz$	20 1000			
$V_F^*$	Paralleled-diode Forward Voltage	for <b>2N6386</b> $I_F = 8A$ for <b>2N6387</b> and <b>2N6388</b> $I_F = 10A$			4 4	V V
$C_{CBO}$	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$			200	pF
$I_{s/b}^{**}$	Second Breakdown Collector Current	$V_{CE} = 25V$	2.6			A
$E_{s/b}$	Second Breakdown Energy	$L = 12mH$ $R_{BE} = 100\Omega$ $V_{BE} = -1.5V$ $I_C = 4.5A$	120			mJ

\* Pulsed : pulse duration = 300 $\mu$ s, duty cycle = 1.5%.

\*\* Pulsed : 1s non repetitive pulse.

For characteristic curves see BDX33/BDX34 series.