SGS-THOMSON MICROELECTRONICS

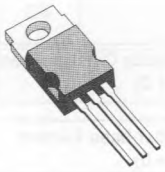
2N6386
2N6387/2N6388

POWER DARLINGTON TRANSISTORS

DESCRIPTION

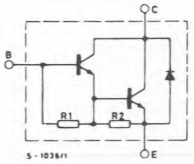
The 2N6386, 2N6387 and 2N6388 are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package.

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



TO-220

INTERNAL SCHEMATIC DIAGRAM



R1 Typ. 10kΩ
R2 Typ. 150Ω

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_{tot}	Total Power Dissipation at $T_{case} \leq 25°C$	65			W
T_{stg}	Storage Temperature	– 65 to 150			°C
T_j	Junction Temperature	150			°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	1.92	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°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 **2N6386**			0.3	mA
		V_{CE} = 60V for **2N6387**			0.3	mA
		V_{CE} = 80V for **2N6388**			0.3	mA
		T_{case} = 125°C				
		V_{CE} = 40V for **2N6386**			3	mA
		V_{CE} = 60V for **2N6387**			3	mA
		V_{CE} = 80V for **2N6388**			3	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 40V for **2N6386**			1	mA
		V_{CE} = 60V for **2N6387**			1	mA
		V_{CE} = 80V for **2N6388**			1	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 **2N6386**	40			V
		for **2N6387**	60			V
		for **2N6388**	80			V
$V_{CER(sus)}$*	Collector-emitter Sustaining Voltage (R_{BE} = 100Ω)	I_C = 200mA for **2N6386**	40			V
		for **2N6387**	60			V
		for **2N6388**	80			V
$V_{CEV(sus)}$*	Collector-emitter Sustaining Voltage (V_{BE} = – 1.5V)	I_C = 200mA for **2N6386**	40			V
		for **2N6387**	60			V
		for **2N6388**	80			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	for **2N6386**				
		I_C = 3A I_B = 6mA			2	V
		for **2N6387** and **2N6388**				
		I_C = 5A I_B = 10mA			2	V
		for **2N6386**				
		I_C = 8A I_B = 80mA			3	V
		for **2N6387** and **2N6388**				
		I_C = 10A I_B = 100mA			3	V
V_{BE}*	Base-emitter Voltage	for **2N6386**				
		I_C = 3A V_{CE} = 3V			2.8	V
		for **2N6387** and **2N6388**				
		I_C = 5A V_{CE} = 3V			2.8	V
		for **2N6386**				
		I_C = 8A V_{CE} = 3V			4.5	V
		for **2N6387** and **2N6388**				
		I_C = 10A V_{CE} = 3V			4.5	V
h_{FE}*	DC Current Gain	for **2N6386**				
		I_C = 3A V_{CE} = 3V	1000		20000	
		for **2N6387** and **2N6388**				
		I_C = 5A V_{CE} = 3V	1000		20000	
		for **2N6386**				
		I_C = 8A V_{CE} = 3V	100			
		for **2N6387** and **2N6388**				
		I_C = 10A V_{CE} = 3V	100			

* Pulsed : pulse duration = 300µs, 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*	Paralled-diode Forward Voltage	for **2N6386** I_F = 8A for **2N6387** and **2N6388** 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 Breadkdown Collector Current	V_{CE} = 25V	2.6			A
$E_{s/b}$	Second Breakdown Energy	L = 12mH R_{BE} = 100Ω V_{BE} = − 1.5V I_C = 4.5A	120			mJ

* Pulsed : pulse duration = 300µs, duty cycle = 1.5%.
** Pulsed : 1s non repetitive pulse.
For characteristic curves see BDX33/BDX34 series.