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NPN **PNP**
2N6383 **2N6648**
2N6384 **2N6649**
2N6385 **2N6650**

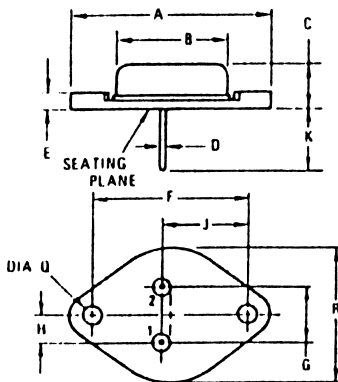
COMPLEMENTARY SILICON POWER
DARLINGTON TRANSISTORS

***MAXIMUM RATINGS**

Rating	Symbol	2N6383 2N6648	2N6384 2N6649	2N6385 2N6650	Unit
Collector-Emitter Voltage	$V_{CE(sus)}$	40	60	80	Vdc
Collector-Emitter Voltage	V_{CEX}	40	60	80	Vdc
Collector-Emitter Voltage	V_{CBO}	40	60	80	Vdc
Emitter Base Voltage	V_{EBO}	5.0			Vdc
Collector Current - Continuous	I_C	10			Adc
Peak (1)**	I_{CM}	15			
Base Current - Continuous	I_B	0.25			Arc
Total Power Dissipation @ $T_C = 25^\circ C$ (2) Derate above $25^\circ C$	P_D	100			Watts
		0.571			W/ $^\circ C$
Operating and Storage Junction Temperature Range (2)	T_J, T_{stg}	-65 to +200			$^\circ C$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.75	$^\circ C/W$
Maximum Lead Temperature for Soldering Purposes: 1/32" from Case for 5 Seconds	T_L	235	$^\circ C$

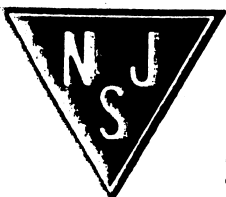


STYLE 1.
PIN 1. BASE
2. EMITTER
CASE COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	39.37	-	1.550
B	-	21.08	-	0.830
C	6.35	7.62	0.250	0.300
D	0.99	1.09	0.039	0.043
E	-	3.43	-	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.33	5.59	0.210	0.220
J	16.64	17.15	0.655	0.675
K	11.18	12.19	0.440	0.480
Q	3.84	4.09	0.151	0.161
R	-	26.67	-	1.050

Collector connected to case.

(TO-3)



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

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
*Collector-Emitter Sustaining Voltage (1) ($I_C = 200 \text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	40 60 80	—	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated Value}$)	I_{CEO}	—	1.0	mAdc
*Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CE(sus)} \text{ Value}$, $V_{BE(off)} = 1.5 \text{ Vdc}$) ($V_{CE} = \text{Rated } V_{CE(sus)} \text{ Value}$, $V_{BE(off)} = 1.5 \text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEV}	—	0.3 3.0	mAdc
*Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{LEO}	—	10	mAdc
Collector-Emitter Sustaining Voltage (1) ($R_{BE} = 100 \Omega$, $I_C = 200 \text{ mA}$)	$V_{CER(sus)}$	40 60 80	—	Vdc
Collector-Emitter Sustaining Voltage (1) ($V_{BE(off)} = 1.5 \text{ V}$, $I_C = 200 \text{ mA}$)	$V_{CLV(sus)}$	40 60 80	—	Vdc

ON CHARACTERISTICS (1)

*DC Current Gain ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 10 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$)	h_{FE}	1000 100	20,000 —	—
*Collector-Emitter Saturation Voltage ($I_C = 5.0 \text{ Adc}$, $I_B = 0.01 \text{ Adc}$) ($I_C = 10 \text{ Adc}$, $I_B = 0.1 \text{ Adc}$)	$V_{CE(sat)}$	—	2.0 3.0	Vdc
*Base-Emitter On Voltage ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 10 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$)	$V_{BE(on)}$	—	2.8 4.5	Vdc
Diode Forward Voltage ($I_F = 10 \text{ Adc}$)	V_F	—	4.0	Vdc

***DYNAMIC CHARACTERISTICS**

Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f_{test} = 1.0 \text{ MHz}$)	C_{ob}	—	200	pF
*Magnitude of Common-Emitter Small-Signal Short-Circuit Current Transfer Ratio ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	$ h_{FE} $	20	—	—
Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{FE}	1000	—	—

SECOND BREAKDOWN

Second Breakdown Collector Current with Base-Forward Biased	$I_{S/B}$	See Figures 8 and 9		
Second Breakdown Energy with Base Reverse-Biased ($L = 12 \text{ mH}$, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 1.5 \text{ Vdc}$, $I_C = 4.5 \text{ Adc}$)	$E_{S/B}$	120	—	mJ

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle = 2%.

* Indicates JEDEC Registered Data.