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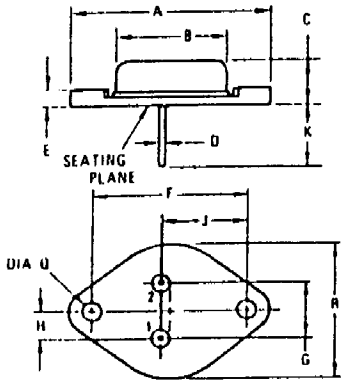
NPN 2N6383 2N6384 2N6385
PNP 2N6648 2N6649 2N6650

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS



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

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	–	39.37	–	1.550
B		21.08		0.830
C	6.35	7.67	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	0.270
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)

*MAXIMUM RATINGS

Rating	Symbol	2N6383 2N6648	2N6384 2N6649	2N6385 2N6650	Unit
Collector-Emitter Voltage	$V_{CEO(sus)}$	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			Adc
Total Power Dissipation @ T_C = 25°C (2)	P_D	100			Watts
Derate above 25°C		0.571			W/°C
Operating and Storage Junction Temperature Range (2)	T_J, T_{stg}	-65 to +200			°C

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
*Collector-Emitter Sustaining Voltage (1) (I_C = 200 mAdc, I_B = 0)	2N6383, 2N6648	$V_{CEO(sus)}$	40		Vdc
	2N6384, 2N6649		60		
	2N6385, 2N6650		80		
Collector Cutoff Current (V_{CE} = Rated Value)		I_{CEO}	–	1.0	mAdc
*Collector Cutoff Current (V_{CE} = Rated $V_{CEO(sus)}$ Value, $V_{BE(off)}$ = 1.5 Vdc)		I_{CEV}	–	0.3	mAdc
(V_{CE} = Rated $V_{CEO(sus)}$ Value, $V_{BE(off)}$ = 1.5 Vdc, T_C = 150°C)			–	3.0	
*Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)		I_{EBO}	–	10	mAdc
Collector-Emitter Sustaining Voltage (1) (R_{BE} = 100 Ω, I_C = 200 mA)	2N6383, 2N6648	$V_{CER(sus)}$	40		Vdc
	2N6384, 2N6649		60		
	2N6385, 2N6650		80		
Collector-Emitter Sustaining Voltage (1) ($V_{BE(off)}$ = 1.5 V, I_C = 200 mA)	2N6383, 2N6648	$V_{CEV(sus)}$	40		Vdc
	2N6384, 2N6649		60		
	2N6385, 2N6650		80		
ON CHARACTERISTICS (1)					
*DC Current Gain (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc)		h_{FE}	1000	20,000	–
(I_C = 10 Adc, V_{CE} = 3.0 Vdc)			100	–	
*Collector-Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 0.01 Adc)		$V_{CE(sat)}$	–	2.0	Vdc
(I_C = 10 Adc, I_B = 0.1 Adc)			–	3.0	
*Base-Emitter On Voltage (I_C = 5.0 Adc, V_{CE} = 3.0 Vdc)		$V_{BE(on)}$	–	2.8	Vdc
(I_C = 10 Adc, V_{CE} = 3.0 Vdc)			–	4.5	
Diode Forward Voltage (I_F = 10 Adc)		V_F	–	4.0	Vdc
***DYNAMIC CHARACTERISTICS**					
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f_{test} = 1.0 MHz)		C_{ob}	–	200	pF
*Magnitude of Common-Emitter Small-Signal Short-Circuit Current Transfer Ratio (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc, f = 1.0 MHz)		$\|h_{fe}\|$	20	–	–
Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc, f = 1.0 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 mH, R_{BE} = 100 Ω, $V_{BE(off)}$ = 1.5 Vdc, I_C = 4.5 Adc)		$E_{s/b}$	120	–	mJ

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

* Indicates JEDEC Registered Data.