

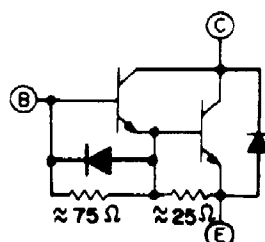
New Jersey Semi-Conductor Products, Inc.

HIGH SPEED NPN POWER DARLINGTON TRANSISTORS

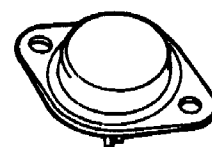
GE6060,1,2

**400-500 VOLTS
20 AMP, 125 WATTS**

These devices are designed for use in high speed switching applications, such as off-line switching power supplies, AC & DC motor control, UPS systems, ultrasonic equipment and other high frequency power conversion equipment.

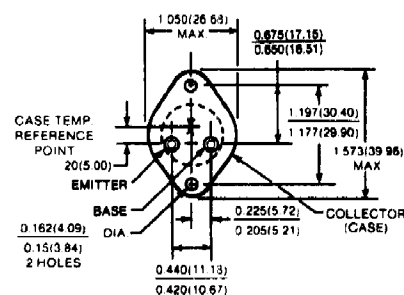
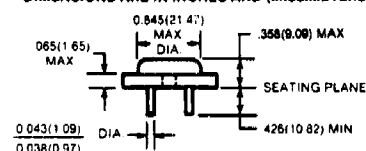


DEVICE CIRCUIT



(TO-3)

DIMENSIONS ARE IN INCHES AND (MILLIMETERS)



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

RATING	SYMBOL	GE6060	GE6061	GE6062	UNITS
Collector-Base Voltage	V_{CBO}	400	450	500	Volts
Collector-Emitter Voltage	V_{CEO}	350	400	450	Volts
Emitter Base Voltage	V_{EBO}	5	5	5	Volts
Collector Current — Continuous	I_C	20	20	20	A
Peak (Repetitive)	I_{CM}	25	25	25	
Peak (Non-Repetitive)	I_{CSM}	42.5	42.5	42.5	
Base Current — Continuous	I_B	4	4	4	A
Peak (Non-Repetitive)	I_{BM}	6	6	6	
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	125	125	125	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	-65 to +150	-65 to +150	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	1	1	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: $\frac{1}{8}$ " from Case for 5 Seconds	T_L	300	300	300	$^\circ\text{C}$

Quality Semi-Conductors

electrical characteristics ($T_C = 25^\circ\text{C}$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics

Collector-Emitter Sustaining Voltage ($I_C = .5\text{mA}$) ($V_{\text{clamp}} = V_{\text{CEO Rated}}$)	GE6060 GE6061 GE6062	$V_{\text{CEO(sus)}}$	350 400 450	— — —	— — —	Volts
Collector-Base Voltage ($I_C = 0.25\text{mA}$)	GE6060 GE6061 GE6062	V_{CBO}	400 450 500	— — —	— — —	Volts
Collector Cutoff Current ($V_{\text{CB}} = V_{\text{CBO Rated}}$)		I_{CBO}	—	—	0.25	mA
Emitter Cutoff Current ($V_{\text{EB}} = 1.5\text{V}$, $I_C = 0$)		I_{EBO}	—	—	200	mA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 14
Clamped Inductive soa with Base Reversed Bias	RBSOA	SEE FIGURE 17

on characteristics

DC Current Gain ($I_C = 10\text{A}$, $V_{\text{CE}} = 5\text{V}$) ($I_C = 15\text{A}$, $V_{\text{CE}} = 5\text{V}$) ($I_C = 20\text{A}$, $V_{\text{CE}} = 5\text{V}$)	h_{FE}	40 30 10	160 115 65	— — —	—
Collector-Emitter Saturation Voltage ($I_C = 10\text{A}$, $I_B = 1\text{A}$) ($I_C = 10\text{A}$, $I_B = 2\text{A}$) ($I_C = 20\text{A}$, $I_B = 2\text{A}$)	$V_{\text{CE(sat)}}$	— — —	1.2 1.15 1.6	1.5 1.4 2	V
Base-Emitter Voltage ($I_C = 5\text{A}$, $I_B = .5\text{A}$) ($I_C = 20\text{A}$, $I_B = 2\text{A}$)	$V_{\text{BE(sat)}}$	— —	1.95 2.3	2.5 3.5	V

switching characteristics

Resistive Load						
Rise Time	$V_{CC} = 300V, t_p = 50 \mu s$ $I_C = 15A, I_{B1} = 1.5A, I_{B2} = 2.25A$	t_r	—	0.3	0.4	μs
Storage Time		t_s	—	2.3	2.5	
Fall Time		t_f	—	0.5	1.0	
Inductive Load, Clamped						
Storage Time	$V_{CC} = 300V, L = 100 \mu H$ $I_C = 15A, I_{B1} = 1.5A, I_{B2} = 2.25A$	t_s	—	2.6	—	μs
Crossover Time		t_c	—	0.5	—	
Fall Time		t_f	—	0.12	—	

emitter-collector diode characteristics

Forward Voltage $I_F = 10\text{A}$ $I_F = 25\text{A}$	V_F	— —	1.9 2.8	— —	Volts
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