

SILICON NPN TRANSISTOR

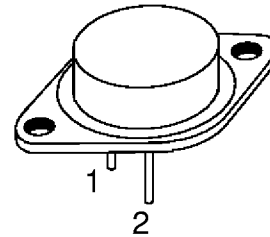
- SGS-THOMSON PREFERRED SALESTYPE

APPLICATIONS

- SWITCHING REGULATORS
- INVERTERS
- SOLENOID AND RELAY DRIERS
- MOTOR CONTROLS
- DEFLECTION CIRCUITS

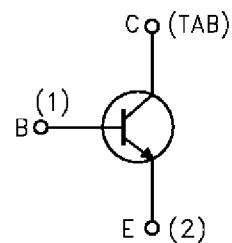
DESCRIPTIONS

- High voltage, high speed switching power transistor suited for use on the 220 and 380V mains.



TO-3

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-Emitter Voltage ($V_{BE} = -1.5V$)	650	V
V_{CEX}	Collector-Emitter Voltage	450	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	400	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	8	V
I_C	Collector Current	8	A
I_{CM}	Collector Peak Current	10	A
I_B	Base Current	4	A
P_{tot}	Total Dissipation at $T_c \leq 25^\circ C$	150	W
T_{stg}	Storage Temperature	-65 to 200	$^\circ C$
T_j	Max. Operating Junction Temperature	200	$^\circ C$

THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1	$^{\circ}\text{C}/\text{W}$
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 650\text{ V}$ $V_{CE} = 650\text{ V}$ $T_c = 125^{\circ}\text{C}$			0.1 1	mA mA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 8\text{ V}$			2	mA
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage	$I_C = 200\text{ mA}$ $L_C = 25\text{ mH}$	400			V
$V_{CEX(clamp)}$	Collector-Emitter Clamping Voltage	$V_{BB} = -5\text{ V}$ $L_C = 170\text{ }\mu\text{H}$ $R_{BB} = 5\text{ }\Omega$ $I_C = 5\text{ A}$ $I_{B1} = -I_{B21} = 1\text{ A}$ $I_C = 8\text{ A}$ $I_{B1} = -I_{B21} = 3\text{ A}$	450 300			V V
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 1\text{ A}$ $I_C = 8\text{ A}$ $I_B = 4\text{ A}$ $I_C = 5\text{ A}$ $I_B = 1\text{ A}$ $T_c = 100^{\circ}\text{C}$			1 2 2	V V V
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 1\text{ A}$			1.6	V
h_{FE*}	DC Current Gain	$I_C = 5\text{ A}$ $V_{CE} = 3\text{ V}$	10		40	
h_{fe}	Small Signal Current Gain	$I_C = 0.2\text{ A}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ MHz}$	3		12	

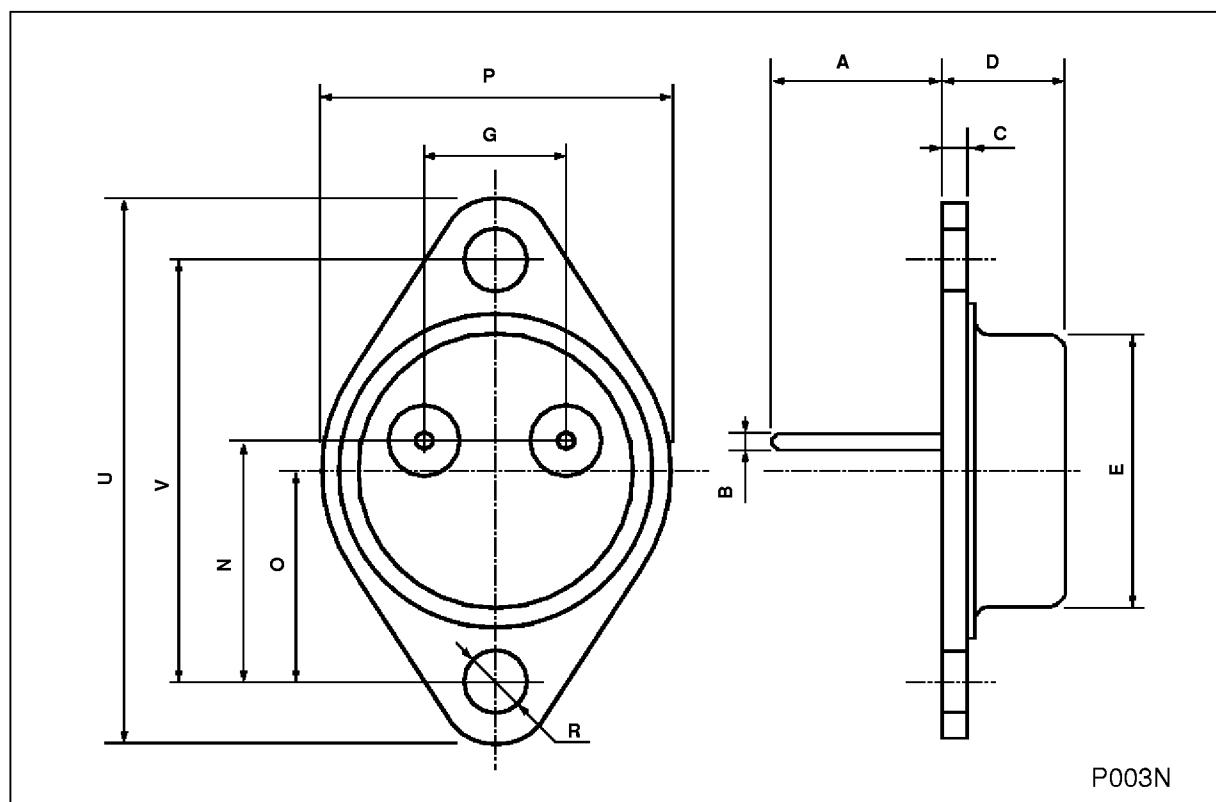
RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_d	Delay Time	$V_{CC} = 125\text{ V}$ $I_C = 5\text{ A}$ $t_p = 20\text{ }\mu\text{s}$			0.1	μs
t_r	Rise Time	$V_{BB} = -6\text{ V}$ $I_{B1} = 1\text{ A}$			0.5	μs
t_r	Rise Time	$V_{CC} = 125\text{ V}$ $I_C = 5\text{ A}$ $t_p = 20\text{ }\mu\text{s}$ $V_{BB} = -6\text{ V}$ $I_{B1} = 1\text{ A}$ $T_c = 125^{\circ}\text{C}$			0.8	μs
t_s	Storage Time	$V_{CC} = 125\text{ V}$ $I_C = 5\text{ A}$ $t_p = 20\text{ }\mu\text{s}$			2.5	μs
t_f	Fall Time	$V_{BB} = -6\text{ V}$ $I_{B1} = -I_{B2} = 1\text{ A}$			0.4	μs
t_s	Storage Time	$V_{CC} = 125\text{ V}$ $I_C = 5\text{ A}$ $t_p = 20\text{ }\mu\text{s}$			4	μs
t_f	Fall Time	$V_{BB} = -6\text{ V}$ $I_{B1} = -I_{B2} = 1\text{ A}$ $T_c = 100^{\circ}\text{C}$			0.8	μs

* Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %

TO-3 (H) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		11.7			0.460	
B	0.96		1.10	0.037		0.043
C			1.70			0.066
D			8.7			0.342
E			20.0			0.787
G		10.9			0.429	
N		16.9			0.665	
P			26.2			1.031
R	3.88		4.09	0.152		0.161
U			39.50			1.555
V		30.10			1.185	



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