SGS-THOMSON MICROELECTRONICS

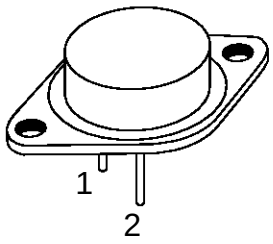
2N6678

SILICON NPN TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE

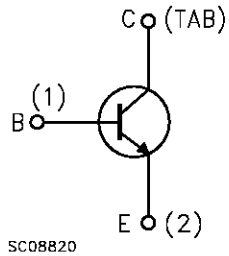
APPLICATIONS
- SWITCHING REGULATORS
- INVERTERS
- SOLENOID AND RELAY DRIERS
- MOTOR CONTROLS
- DEFLECTION CIRCUITS

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	15	A
I_{CM}	Collector Peak Current	20	A
I_B	Base Current	5	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	175	W
T_{stg}	Storage Temperature	-65 to 200	^oC
T_j	Max. Operating Junction Temperature	200	^oC

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 650 V V_{CE} = 650 V T_c = 100 °C			0.1 1	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 8 V			2	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 200 mA L_C = 25 mH	400			V
$V_{CEX(sus)}$	Collector-Emitter Sustaining Voltage	V_{BB} = -6 V L_C = 50 µH R_{BB} = 2 Ω I_C = 15 A I_B = 3 A	450			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 15 A I_B = 3 A I_C = 15 A I_B = 3 A T_c = 100 °C			1 2	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 15 A I_B = 3 A			1.5	V
h_{FE}*	DC Current Gain	I_C = 15 A V_{CE} = 3 V	8			
h_{fe}	Small Signal Current Gain	I_C = 1 A V_{CE} = 10 V f = 5 MHz	3		10	

RESISTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_d	Delay Time	V_{CC} = 200 V I_C = 15 A t_p = 20 µs V_{BB} = -6 V I_{B1} = 3 A			0.1	µs
t_r	Rise Time				0.6	ms
t_r	Rise Time	V_{CC} = 200 V I_C = 15 A t_p = 20 µs V_{BB} = -6 V I_{B1} = 3 A T_c = 100 °C			1	µs
t_s	Storage Time	V_{CC} = 200 V I_C = 15 A t_p = 20 µs V_{BB} = -6 V I_{B1} = -I_{B2} = 3 A			2.5	µs
t_f	Fall Time				0.5	ms
t_s	Storage Time	V_{CC} = 200 V I_C = 15 A t_p = 20 µs V_{BB} = -6 V I_{B1} = -I_{B2} = 3 A T_c = 100 °C			4	µs
t_f	Fall Time				1	ms

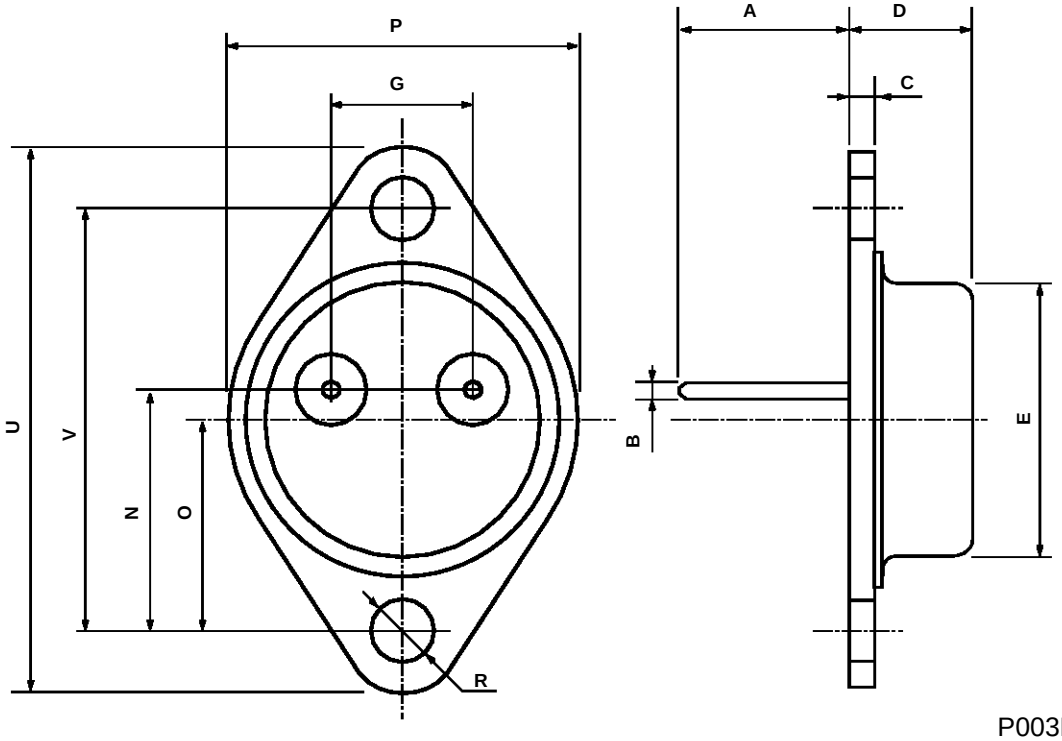
INDUCTIVE LOAD

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_c	Crossover Time	V_{CC} = 200 V I_C = 15 A L_C = 50 µH R_C = 13.5 Ω I_{B1} = -I_{B2} = 3 A V_{clamp} = 450 V			0.5	µs
t_c	Crossover Time	V_{CC} = 200 V I_C = 15 A L_C = 50 µH R_C = 13.5 Ω I_{B1} = -I_{B2} = 3 A V_{clamp} = 450 V T_c = 100 °C			0.8	µs

* Pulsed: Pulse duration = 300 µs, duty cycle 2 %

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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