SGS-THOMSON MICROELECTRONICS

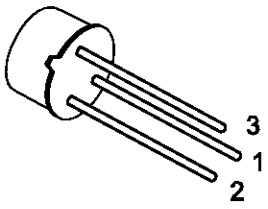
BUY48

SILICON NPN SWITCHING TRANSISTOR

- SGS-THOMSON PREFERRED SALESTYPE

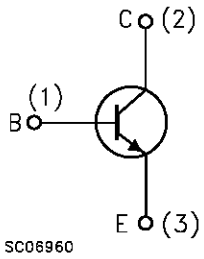
DESCRIPTION

The BUY48 is a silicon epitaxial planar NPN transistor in jedec TO-39 metal case. It is used in high-voltage, high-current switching applications up to 7 A.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (IE = 0)	200	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	170	V
V_{EBO}	Emitter-Base Voltage (IC = 0)	6	V
I_C	Collector Current	7	A
I_{CM}	Collector Peak Current (repetitive)	10	A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25\ ^oC$	10	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	15	$^oC/W$
$R_{thj\text{-}amb}$	Thermal Resistance Junction-case-ambient Max	175	$^oC/W$

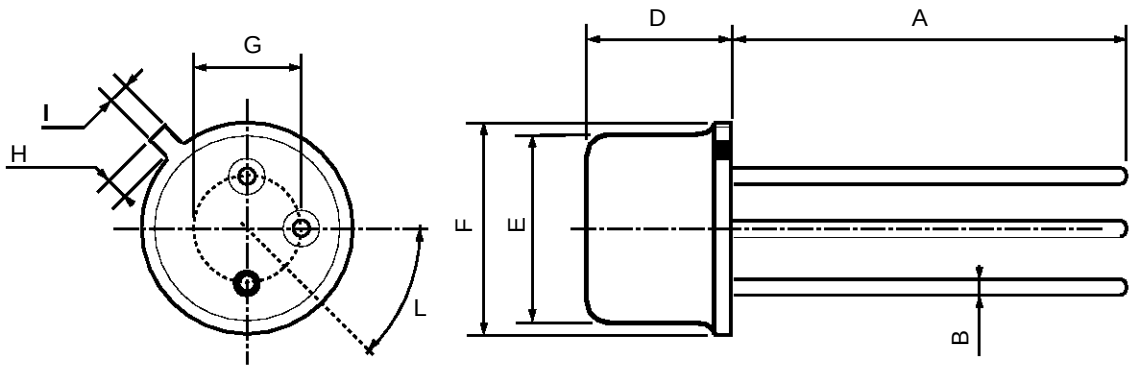
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = 100 V V_{CB} = 100 V T_{CASE} = 125 ^oC			10 1	µA mA
$V_{(BR)CBO}$*	Collector-Base Breakdown Voltage (I_E = 0)	I_C = 1 mA	200			V
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 20 mA	170			V
V_{EBO}*	Emitter-base Voltage (I_C = 0)	I_E = 1 mA	6			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 0.5 A I_B = 50 mA I_C = 2 A I_B = 0.2 A I_C = 5 A I_B = 0.5 A		0.05	 0.45 1	V V V
$V_{BE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 0.5 A I_B = 50 mA I_C = 2 A I_B = 0.2 A I_C = 5 A I_B = 0.5 A		0.8	 1.1 1.5	V V V
h_{FE}*	DC Current Gain	I_C = 50 mA V_{CE} = 5 V I_C = 0.5 A V_{CE} = 5 V I_C = 2 A V_{CE} = 5 V I_C = 5 A V_{CE} = 5 V	 40 40 15	130 150 130 45		
f_T	Transistor Frequency	I_C = 100 mA V_{CE} = 10 V		90		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 50 V f = 1 MHZ		45	80	pF
t_{on}	Turn-on Time	I_C = 5 A V_{CC} = 40 V			1	µs
t_{off}	Turn-off Time	I_{B1} = - I_{B2} = 0.5 A			2	µs

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

TO39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45^{o} (typ.)					



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