SILICON PLANAR NPN

BUY 47
BUY 48

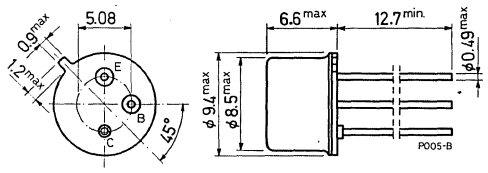
HIGH VOLTAGE, HIGH CURRENT SWITCH

The BUY 47 and BUY 48 are silicon planar epitaxial NPN transistors in Jedec TO-39 metal case. They are used in high-voltage, high-current switching applications up to 5 A.

ABSOLUTE MAXIMUM RATINGS		BUY 47	BUY 48
V_{CBO}	Collector-base voltage ($I_E = 0$)	150 V	200 V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	120 V	170 V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	6 V	
→ I_C	Collector current	7 A	
→ I_{CM}	Collector peak current (repetitive)	10 A	
P_{tot}	Total power dissipation at $T_{amb} \leqslant 25$ °C	1 W	
	at $T_{case} \leqslant 25$ °C	7 W	
T_{stg}	Storage temperature	-55 to 200 °C	
T_j	Junction temperature	200 °C	

MECHANICAL DATA

Dimensions in mm



(sim. to **TO-39**)

BUY 47
BUY 48

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	25	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	175	°C/W

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

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	for **BUY 47**				
		V_{CB} = 80 V			10	μA
		V_{CB} = 80 V T_{amb} = 125 °C			1	mA
		for **BUY 48**				
		V_{CB} = 100 V			10	μA
		V_{CB} = 100 V T_{amb} = 125 °C			1	mA
$V_{(BR)CBO}$*	Collector-base breakdown voltage (I_E = 0)	I_C = 1 mA				
		for **BUY 47**	150			V
		for **BUY 48**	200			V
$V_{(BR)CEO}$*	Collector-emitter breakdown voltage (I_B = 0)	I_C = 20 mA				
		for **BUY 47**	120			V
		for **BUY 48**	170			V
$V_{(BR)EBO}$*	Emitter-base breakdown 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		0.1		V
		I_C = 2 A I_B = 0.2 A		0.2	0.45	V
		I_C = 5 A I_B = 0.5 A		0.55	1	V

ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
$V_{BE\ (sat)}$*	Base-emitter saturation voltage	I_C = 0.5 A I_B = 50 mA		0.75		V
		I_C = 2 A I_B = 0.2 A		1	1.1	V
		I_C = 5 A I_B = 0.5 A		1.15	1.5	V
h_{FE}*	DC current gain	I_C = 50 mA V_{CE} = 5 V		130		—
		I_C = 0.5 A V_{CE} = 5 V	40	150		—
		I_C = 2 A V_{CE} = 5 V	40	130		—
		I_C = 5 A V_{CE} = 5 V	15	45		—
f_T	Transition frequency	I_C = 100 mA V_{CE} = 10 V		90		MHz
C_{CBO}	Collector-base capacitance	I_E = 0 V_{CB} = 50 V		45	80	pF
t_{on}	Turn-on time	I_C = 5 A I_{B1} = 0.5 A		0.5	1	µs
t_{off}	Turn-off time	I_C = 5 A I_{B1} = -I_{B2} = 0.5 A		1.2	2	µs

* Pulsed: pulse duration = 300 µs, duty factor = 1 %