DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

BUV22

SILICON NPN SWITCHING TRANSISTOR

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO(SUS)}$	200	V
Collector-base voltage	V_{CBO}	300	V
Emitter-base voltage	V_{EBO}	7.0	V
Collector-emitter voltage	V_{CEX}	300	V
Collector-emitter voltage	V_{CER}	290	V
Collector current	I_C	40	A
Collector peak current	I_{CM}	50	A
Base current	I_B	8	A
Total dissipation @ T_C < 25°C	P_D	250	W
Maximum operating and storage temperature range	$T_{J,\ Tstg}$	-65 to +200	°C
Maximum thermal resistance junction to case	$R_{thj\text{-}case}$	0.7	°C/W

ELECTRICAL CHARACTERISTICS T_C = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector emitter sustaining voltage	$V_{CEO(sus)}$	I_C = 200mA, I_B = 0, L = 25mH	250	-	-	V
Collector cutoff current at reverse bias	I_{CEX}	V_{CE} = 300V, V_{BE} = -1.5V V_{CE} = 300V, V_{BE} = -1.5, T_C = 125°C	- -	- -	3.0 12	mA
Collector emitter cutoff current	I_{CEO}	V_{CE} = 200V	-	-	3.0	mA
Emitter base reverse voltage	V_{EBO}	I_E = 50mA	7	-	-	V
Emitter cutoff current	I_{EBO}	V_{EB} = 5V	-	-	1.0	mA
SECOND BREAKDOWN						
Second breakdown collector current with base forward biased	$I_{S/b}$	V_{CE} = 20V, t = 1s V_{CE} = 140V, t = 1s	12 0.15	- -	- -	A
ON-CHARACTERISTICS (1)						
DC current gain	h_{FE}	I_C = 10A, V_{CE} = 2V I_C = 140A, V_{CE} = 4V	20 10	- -	60 -	-
Collector emitter saturation voltage	$V_{CE(sat)}$	I_C = 10A, I_B = 1.0A I_C = 20A, I_B = 2.5A	- -	- -	1.0 1.5	V
Base emitter saturation voltage	$V_{BE(sat)}$	I_C = 40A, I_B = 4.0A	-	-	1.5	V
DYNAMIC CHARACTERISTICS						
Current gain – bandwidth product	f_T	V_{CE} = 15V, I_C = 2A, f = 4MHz	8.0	-	-	MHz

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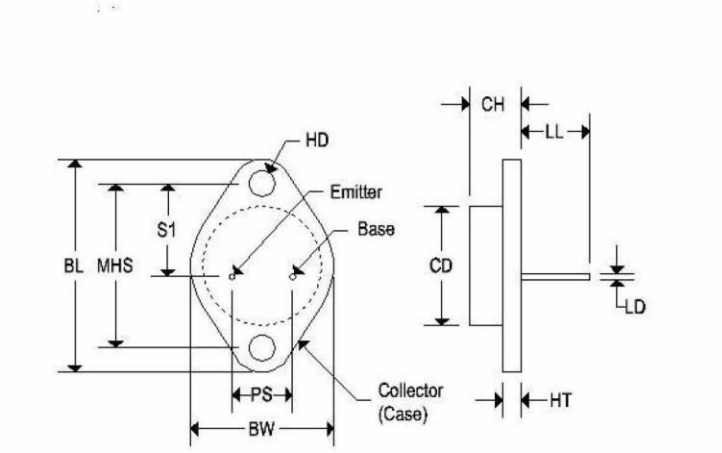
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
SWITCHING CHARACTERISTICS						
Turn-on time	t_{on}	I_C = 20A, I_{B1} = I_{B2} = 2.5A, V_{CC} = 100V, R_C = Ω	-	-	0.8	µs
Turn-off time	t_{off}		-	-	2.0	
Fall time	t_f		-	-	0.35	

Note 1: Pulse test: Pulse width ≤ 300µs, duty cycle ≤ 2%.

MECHANICAL CHARACTERISTICS

Case:	TO-3
Marking:	Alpha-numeric
Pin out:	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.380	6.860	9.650
HT	0.060	0.135	1.520	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150

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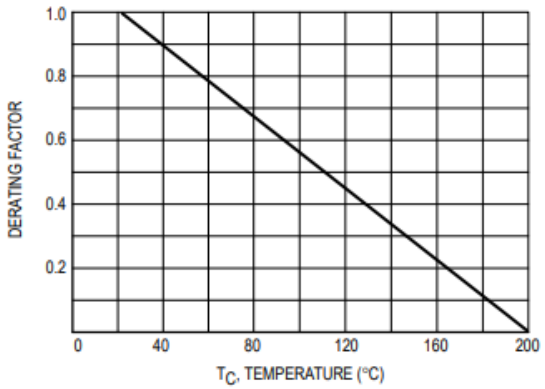

Figure 1. Power Derating

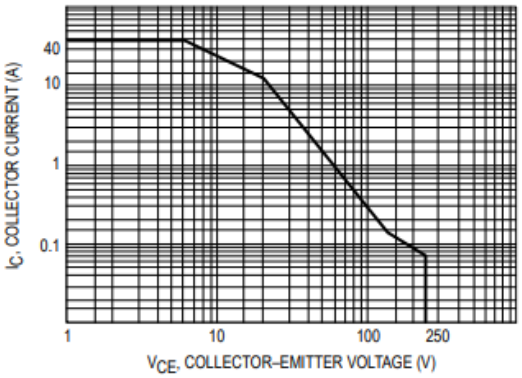

Figure 2. Active Region Safe Operating Area

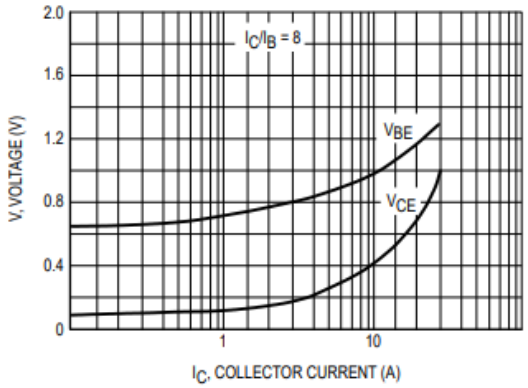

Figure 3. "On" Voltages

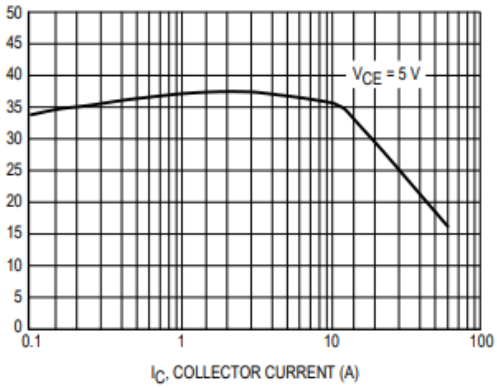

Figure 4. DC Current Gain

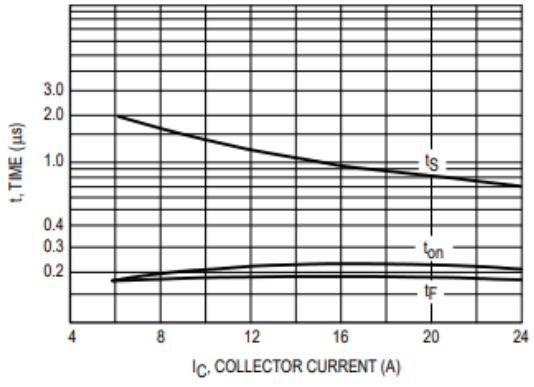

Figure 5. Resistive Switching Performance

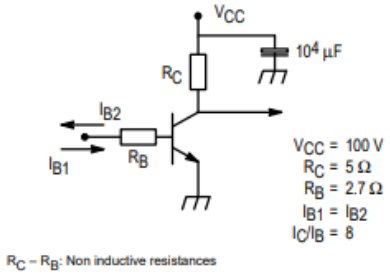

Figure 6. Switching Times Test Circuit