DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

BUX47(A)

NPN HIGH VOLTAGE 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

Characteristic	Symbol	BUX47	BUX47A	Unit
Collector-Emitter Voltage (R_{BE} = 10Ω)	V_{CER}	850	1000	V
Collector-Emitter Voltage (V_{BE} = 0)	V_{CES}	850	900	V
Collector-Emitter Voltage (I_B = 0)	V_{CEO}	400	450	V
Emitter-Base Voltage (I_C = 0)	V_{EBO}	7.0		V
Collector Current – continuous **Peak**	I_C	9 15		A
Base Current	I_B	8		A
Base Peak Current (t_p < 5ms)	I_{BM}	10		A
Total Power Dissipation @ T_C = 25°C	P_D	125		W
Junction and Storage Temperature Range	T_J, T_{stg}	-65 to +175		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.2		°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise specified)

Characteristic		Symbol	Min	Typ	Max	Unit
Collector Cutoff Current						
(V_{CE} = 850V, R_{BE} = 10Ω)		I_{CER}	-	-	0.4	mA
(V_{CE} = 850V, R_{BE} = 10Ω, T_J = 125°C)			-	-	3.0	
Collector Cutoff Current						
(V_{BE} = -2.5V, V_{CE} = 850V)		I_{CEV}	-	-	0.15	mA
(V_{BE} = -2.5V, V_{CE} = 850V, T_J = 125°C)			-	-	1.5	
Emitter Cutoff Current						
(V_{EB} = 5.0V, I_C = 0)		I_{EBO}	-	-	1	mA
Collector-Emitter Sustaining Voltage[1]	BUX47	$V_{CEO(sus)}$	400	-	-	V
(I_B = 0, I_C = 0.2A, L = 25mH)	BUX47A		450	-	-	
Emitter-Base Voltage						
(I_C = 0, I_E = 50mA)		V_{EBO}	7	-	30	V
Collector-Emitter Saturation Voltage[1]						
(I_C = 5.0A, I_B = 1A)	BUX47A	$V_{CE(sat)}$	-	-	1.5	V
(I_C = 8A, I_B = 2.5A)			-	-	3.0	
(I_C = 6.0A, I_B = 1.2A)	BUX47		-	-	1.5	
(I_C = 9.0A, I_B = 3.0A)			-	-	3.0	
Base-Emitter Saturation Voltage[1]						
(I_C = 5.0A, I_B = 1A)	BUX47A	$V_{BE(sat)}$	-	-	1.6	V
(I_C = 6.0A, I_B = 1.2A)	BUX47		-	-	1.6	
RESISTIVE SWITCHING TIMES						
Turn-On Time	I_C = 5.0A, V_{CC} = 150V, I_{B1} = -I_{B2} = 1A	t_{on}	-	-	0.7	µs
Storage Time		t_s	-	-	3.0	
Fall Time		t_f	-	-	0.8	
Turn-On Time	I_C = 6.0A, V_{CC} = 150V, I_{B1} = -I_{B2} = 1.2A	t_{on}	-	-	0.8	
Storage Time		t_s	-	-	2.5	
Fall Time		t_f	-	-	0.8	
INDUCTIVE SWITCHING TIMES						
Fall Time	I_C = 5.0A, I_{B1} = 1A, V_{BE} = 5V, V_{CC} = 300V, L = 3µH, T_J = 100°C	t_f	-	-	0.5	µs

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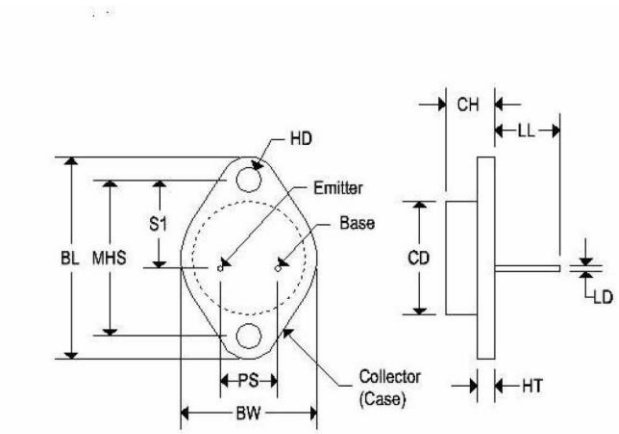
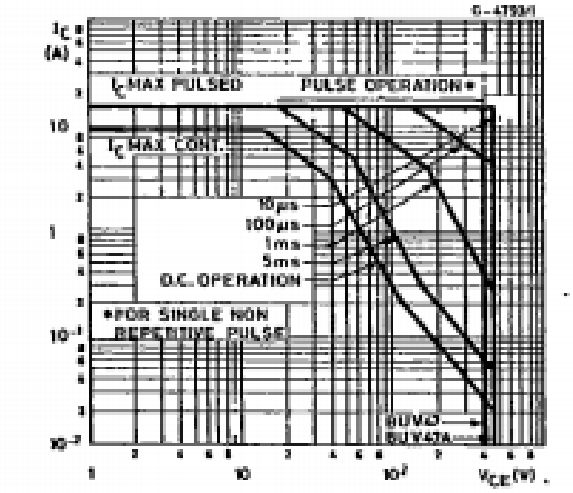
MECHANICAL CHARACTERISTICS

Case:	TO-3
Marking:	Alpha-Numeric
Polarity:	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

Safe Operating Areas (TO-3).



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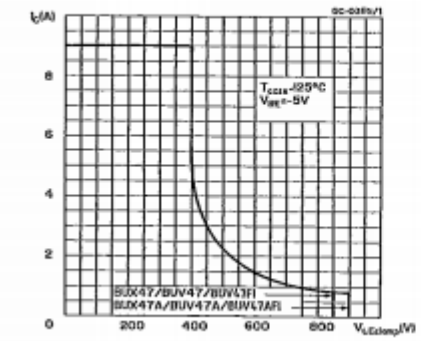
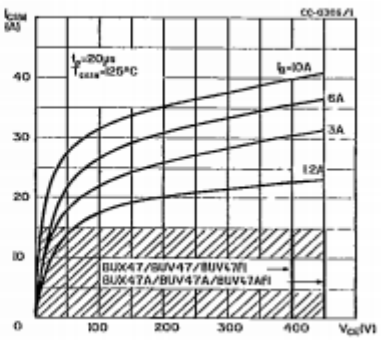
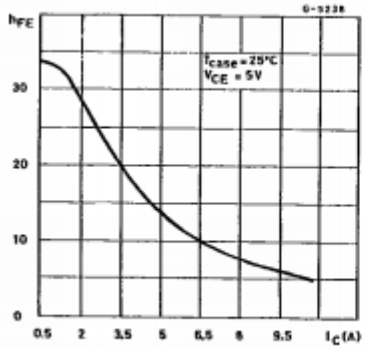
Clamped Reverse Bias Safe Operating Areas.



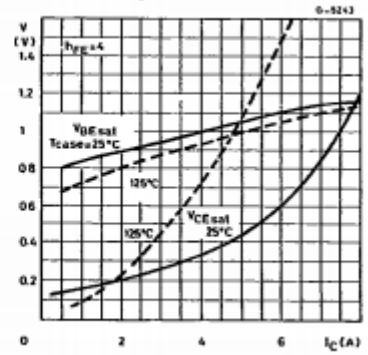
Forward Biased Accidental Overload Area



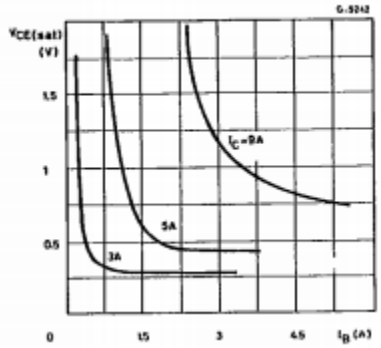
DC Current Gain.



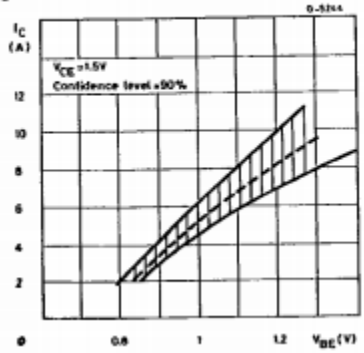
Saturation Voltage.



Collector-emitter Saturation Voltage.



Collector Current Spread vs. Base Emitter Voltage.



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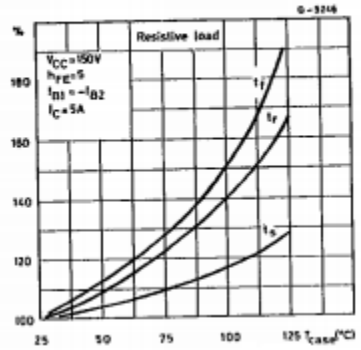
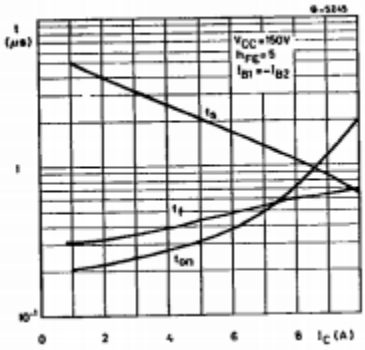
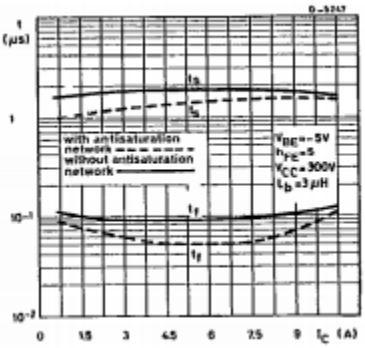
Switching Times Percentage Variation vs. Case Temperature.



Switching Times Resistive Load



Switching Times Inductive Load



Switching Times Inductive Load vs. Case Temperature.