DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N6233-2N6235

HIGH VOLTAGE NPN TRANSISTORS

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

Rating	Symbol	2N6233	2N6234	2N6235	Unit
Collector-emitter voltage	V_{CEO}	225	275	325	Vdc
Collector-base voltage	V_{CB}	250	300	350	Vdc
Emitter-base voltage	V_{EB}	6.0			Vdc
Collector current – Continuous **Peak**	I_C	5.0 10			Adc
Base current	I_B	2.0			Adc
Total device dissipation @ T_C = 25°C **Derate above 25°C**	P_D	50 0.286			Watts W/°C
Operating and storage junction temperature range	T_J, T_{stg}	-65 to +200			°C
THERMAL CHARACTERISTICS					
Characteristic	**Symbol**	**Max**			**Unit**
Thermal resistance, junction to case	θ_{JC}	3.5			°C/W

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

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-emitter sustaining voltage [1] **(I_C = 20 mAdc, I_B = 0)**	2N6233 2N6234 2N6235	$V_{CEO(sus)}$	225 275 325	- - -	Vdc
Collector-cutoff current **(V_{CE} = 225, I_B = 0)** **(V_{CE} = 275, I_B = 0)** **(V_{CE} = 325, I_B = 0)**	 2N6233 2N6234 2N6235	I_{CEO}	 - - -	 1.0 1.0 1.0	mAdc
Collector-cutoff current **(V_{CE} = 250 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)** **(V_{CE} = 300 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)** **(V_{CE} = 350 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C)**	 2N6233 2N6234 2N6235	I_{CEX}	 - - -	 1.0 1.0 1.0	mAdc
Collector-cutoff current **(V_{CB} = 250 Vdc, I_E = 0)** **(V_{CB} = 300 Vdc, I_E = 0)** **(V_{CB} = 350 Vdc, I_E = 0)**	 2N6233 2N6234 2N6235	I_{CBO}	 - - -	 0.1 0.1 0.1	mAdc
Emitter-cutoff current **(V_{BE} = 6.0 Vdc, I_C = 0)**		I_{EBO}	-	0.1	mAdc

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

Characteristics	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC current gain **(I_C = 0.1 Adc, V_{CE} = 5.0 Vdc)** **(I_C = 1.0 Adc, V_{CE} = 5.0 Vdc)** **(I_C = 3.0 Adc, V_{CE} = 5.0 Vdc)**	h_{FE}	25 25 10	- 125 -	-
Collector-emitter saturation voltage **(I_C = 1.0 Adc, I_B = 0.1 Adc)** **(I_C = 5.0 Adc, I_B = 1.0 Adc)**	$V_{CE(sat)}$	- -	0.5 2.5	Vdc
Base emitter saturation voltage **(I_C = 1.0 Adc, I_B = 0.1 Adc)** **(I_C = 5.0 Adc, I_B = 1.0 Adc)**	$V_{BE(sat)}$	- -	1.0 2.0	Vdc
Base-emitter on voltage **(I_C = 1.0 Adc, V_{CE} = 5.0 Vdc)**	$V_{BE(on)}$	-	1.0	Vdc
DYNAMIC CHARACTERISTICS				
Current-gain bandwidth product (2) **(IC = 0.25 Adc, V_{CE} = 10 Vdc, f_{test} = 10 MHz**	f_T	20	-	MHz
Output capacitance **(V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz)**	C_{ob}	-	250	pF
SWITCHING CHARACTERISTICS				
Rise time **(V_{CC} = 200 Vdc, I_C = 1.0 Adc, I_B = 0.1 Adc)**	t_r	-	0.5	µs
Storage time **(V_{CC} = 200 Vdc, I_C = 1.0 Adc, I_{B1} = I_{B2} = 0.1 Adc)**	t_s	-	3.5	µs
Fall time **(V_{CC} = 200 Vdc, I_C = 1.0 Adc, I_{B1} = I_{B2} = 0.1 Adc)**	t_f	-	0.5	µs

(1) Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%
(2) fT = |hfe| *f_{test}

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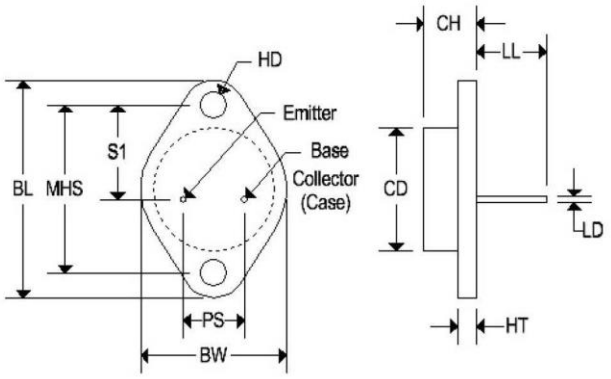
MECHANICAL CHARACTERISTICS

Case:	TO-66
Marking:	Alpha-numeric
Polarity:	See below



Dim	TO-66			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	1.205	1.280	30.60	32.50
CD	0.445	0.557	11.303	14.148
CH	0.257	0.284	6.540	7.220
LL	0.374	0.413	9.500	10.50
BW	0.680	0.727	17.26	18.46
LD	0.030	0.036	0.760	0.920
HT	0.054	0.065	1.380	1.650
MHS	0.951	0.976	24.16	24.78
S1	0.545	0.614	13.84	15.60
HD	0.131	0.154	3.320	3.920
PS	0.191	0.210	4.860	5.340

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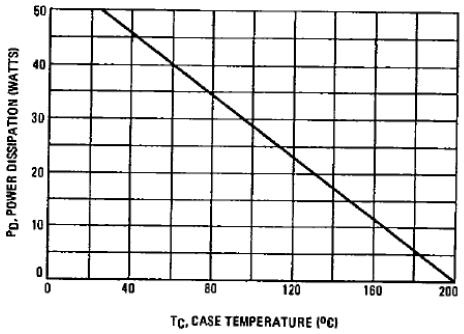
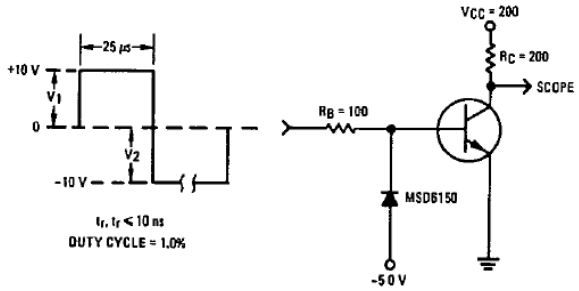
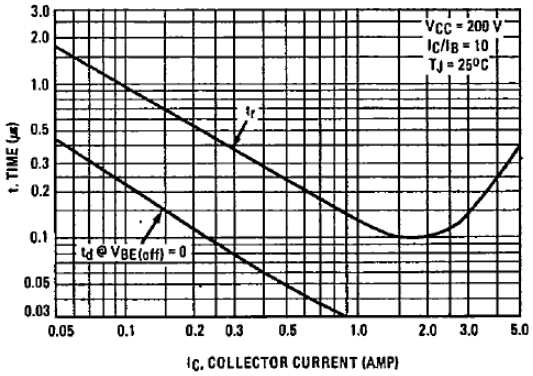


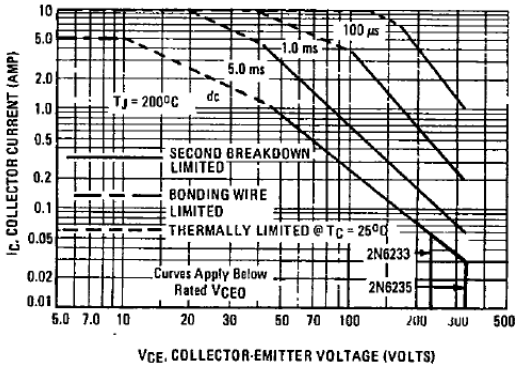
POWER TEMPERATURE DERATING



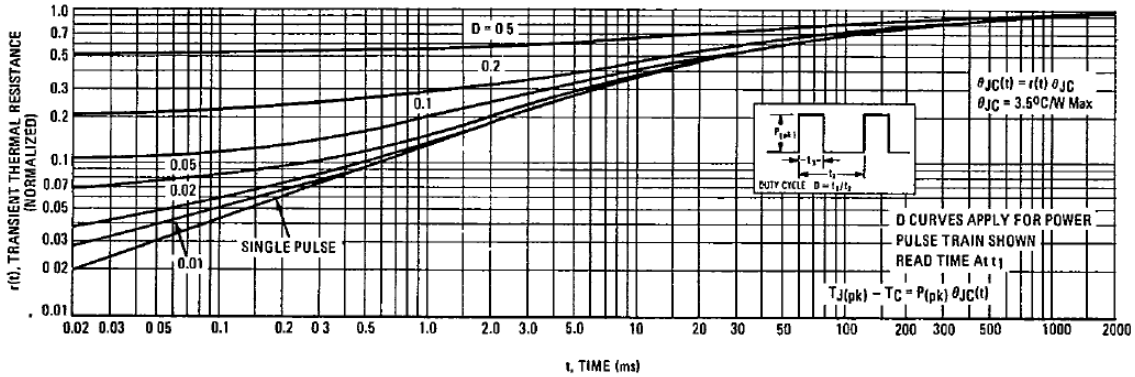
SWITCHING TIME TEST CIRCUIT



TURN-ON TIME



ACTIVE REGION SAFE OPERATING AREA



THERMAL RESPONSE

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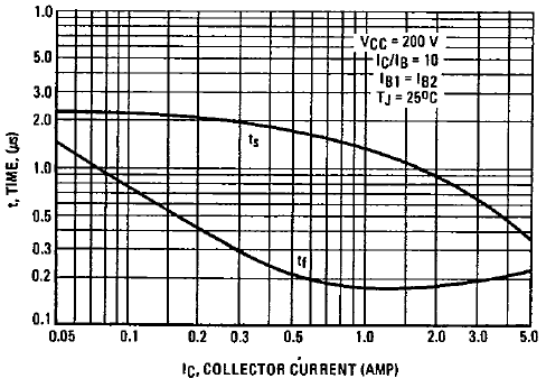
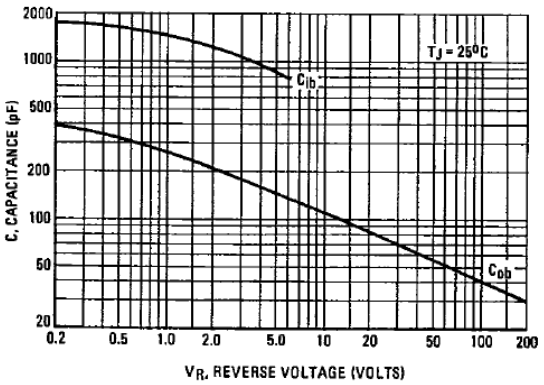


TURN-OFF TIME



CAPACITANCES