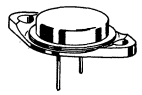
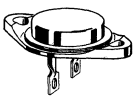
2N2832 (GERMANIUM)
2N2833
2N2834

PNP germanium transistors for switching and amplifier applications.



CASE 11A
(TO-3 modified)
Collector connected to case



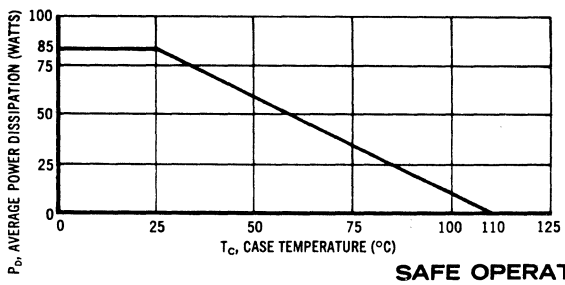
CASE 4-04
(TO-41)

For units with solder lugs attached, specify device MP2832 etc. (TO-41 package)

MAXIMUM RATINGS

Rating	Symbol	2N2832	2N2833	2N2834	Unit
Collector-Emitter Voltage	V_{CEO}	50	75	100	Vdc
Collector-Base Voltage	V_{CB}	80	120	140	Vdc
Emitter-Base Voltage	V_{EB}	2.0			Vdc
Collector Current - Continuous	I_C	20			Adc
Base Current	I_B	5.0			Adc
Total Device Dissipation @ $T_C = 25°C$	P_D	85			Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +110			

FIGURE 1 — POWER DERATING CURVE



THESE TRANSISTORS ARE ALSO SUBJECT TO SAFE AREA CURVES AS INDICATED BY FIGURES 2, 3, 4. BOTH LIMITS ARE APPLICABLE AND MUST BE OBSERVED

SAFE OPERATING AREAS

FIGURE 2 — 2N2832

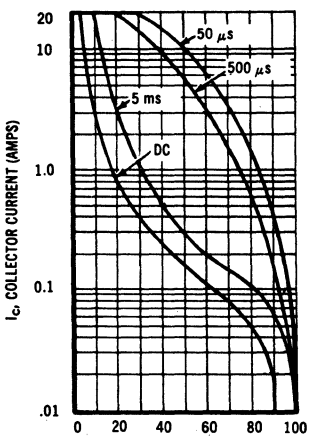


FIGURE 3 — 2N2833

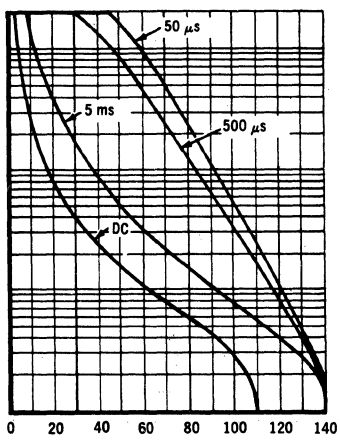
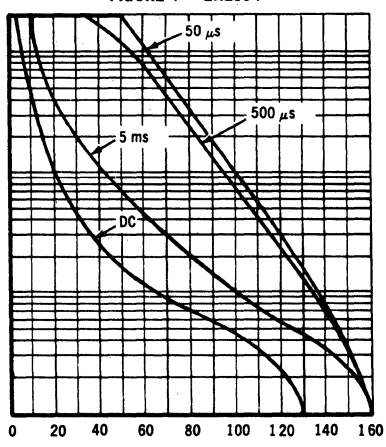


FIGURE 4 — 2N2834



V_{CE}, COLLECTOR-EMITTER VOLTAGE (VOLTS)

The Safe Operating Area Curves indicate the Ic - V_{CE} limits below which the devices will not go into secondary breakdown. As secondary breakdown is independent of temperature and duty cycle, these curves can be used as long as the average power derating curve (Figure 1) is also taken into consideration to insure operation below the maximum junction temperature.

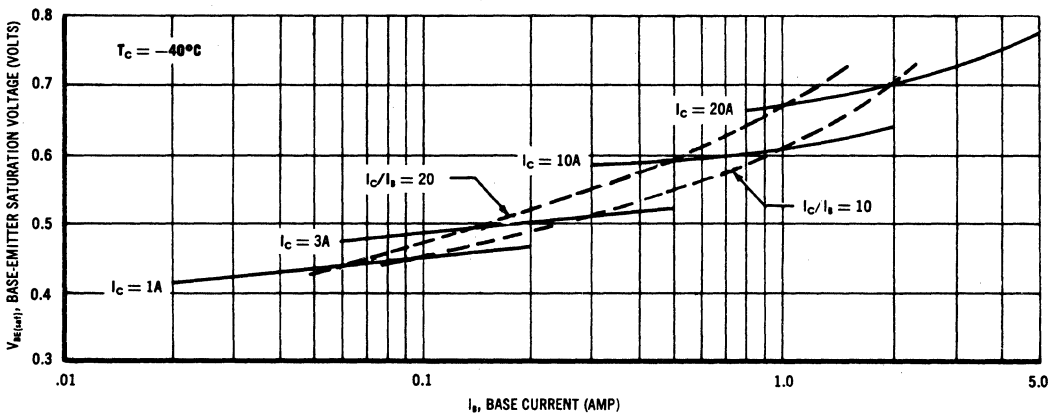
2N2832 thru 2N2834 (Continued)

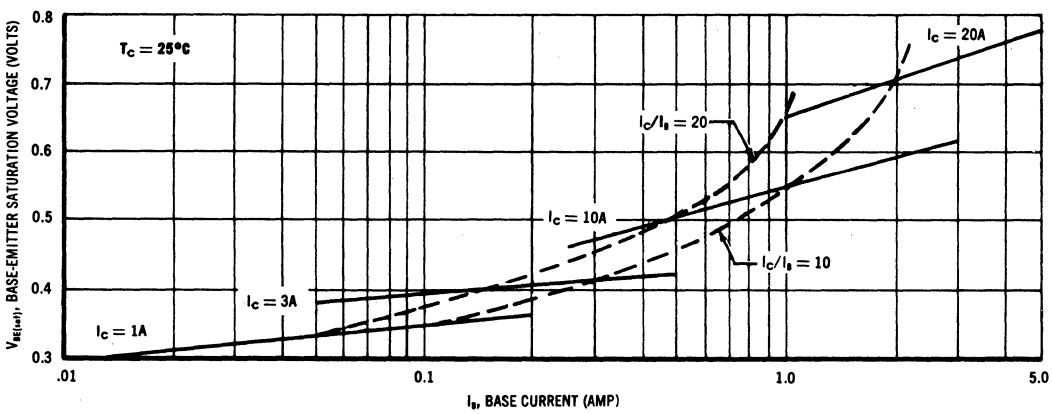
ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage[1] (I_C = 100 mAdc, I_B = 0)	2N2832	$BV_{CEO(sus)}$	50	-	-	Volts
	2N2833		75	-	-	
	2N2834		100	-	-	
Emitter-Base Breakdown Voltage (I_E = 50 mAdc, I_C = 0)		BV_{EBO}	2.0	-	-	Vdc
Floating Potential*		V_{EBF}*				Volts
(V_{CB} = 80 Vdc, I_E = 0)	2N2832		-	-	0.5	
(V_{CB} = 120 Vdc, I_E = 0)	2N2833		-	-	0.5	
(V_{CB} = 140 Vdc, I_E = 0)	2N2834		-	-	0.5	
Collector Cutoff Current*		I_{CES}*				mAdc
(V_{CE} = 100 Vdc, V_{BE} = 0)	2N2832		-	-	20	
(V_{CE} = 140 Vdc, V_{BE} = 0)	2N2833		-	-	20	
(V_{CE} = 160 Vdc, V_{BE} = 0)	2N2834		-	-	20	
Collector Cutoff Current**		I_{CEX}**				mAdc
(V_{CE} = 50 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = +85°C)	2N2832		-	-	40	
(V_{CE} = 75 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = +85°C)	2N2833		-	-	40	
(V_{CE} = 100 Vdc, $V_{BE(off)}$ = 0.2 Vdc, T_C = +85°C)	2N2834		-	-	40	
Collector Cutoff Current*		I_{CBO}*				mAdc
(V_{CB} = 2.0 Vdc, I_E = 0)			-	-	0.3	
(V_{CB} = 80 Vdc, I_E = 0)	2N2832		-	-	10	
(V_{CB} = 120 Vdc, I_E = 0)	2N2833		-	-	10	
(V_{CB} = 140 Vdc, I_E = 0)	2N2834		-	-	10	
ON CHARACTERISTICS						
DC Current Gain		h_{FE}				-
(I_C = 1.0 Adc, V_{CE} = 2.0 Vdc)			50	75	-	
(I_C = 10 Adc, V_{CE} = 2.0 Vdc)			25	-	100	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 1.0 Adc, I_B = 100 mAdc)			-	-	0.15	
(I_C = 10 Adc, I_B = 1.0 Adc)			-	-	0.30	
(I_C = 20 Adc, I_B = 2.0 Adc)			-	-	0.5	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$				Vdc
(I_C = 1.0 Adc, I_B = 100 mAdc)			-	-	0.6	
(I_C = 10 Adc, I_B = 1.0 Adc)			-	-	0.75	
(I_C = 20 Adc, I_B = 2.0 Adc)			-	-	1.0	
DYNAMIC CHARACTERISTICS						
Small Signal Current Gain (I_C = 1.0 Adc, V_{CE} = 10 Vdc, f = 5.0 MHz)		h_{fe}	2.0	3.5	-	-
Rise Time		t_r	-	2.0	4.0	μs
Storage Time		t_s	-	3.0	6.0	μs
Fall Time		t_f	-	1.0	2.5	μs

*SWEEP TEST: 1/2 Sine Wave, 60 Hz min.
[1]PULSE TEST: Pulse Width = 1.0 ms, 2.0% Duty Cycle.

FIG 5 — BASE-EMITTER SATURATION VOLTAGE VARIATIONS





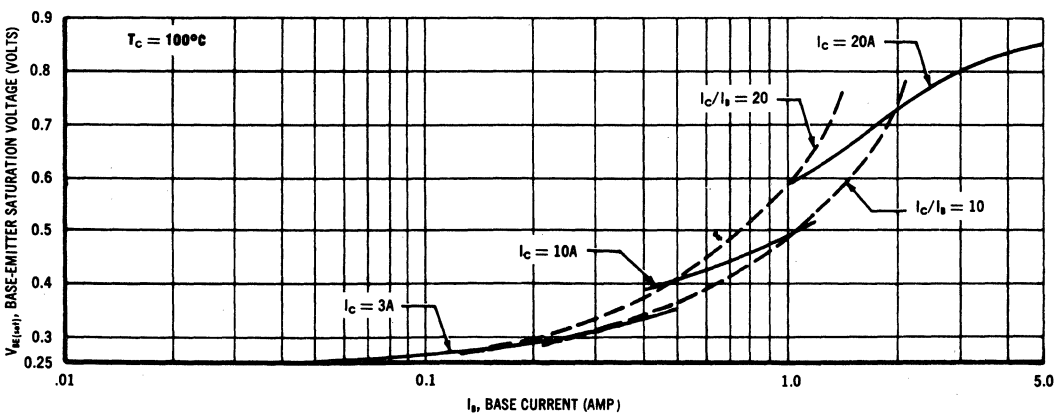
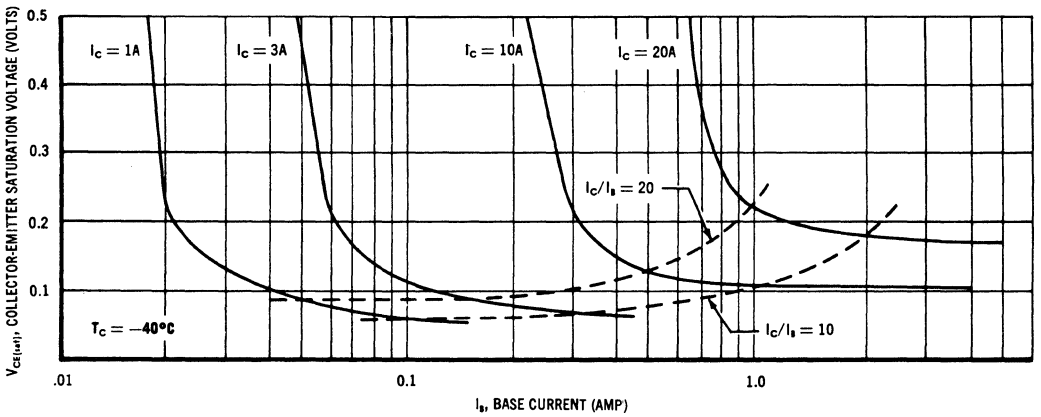
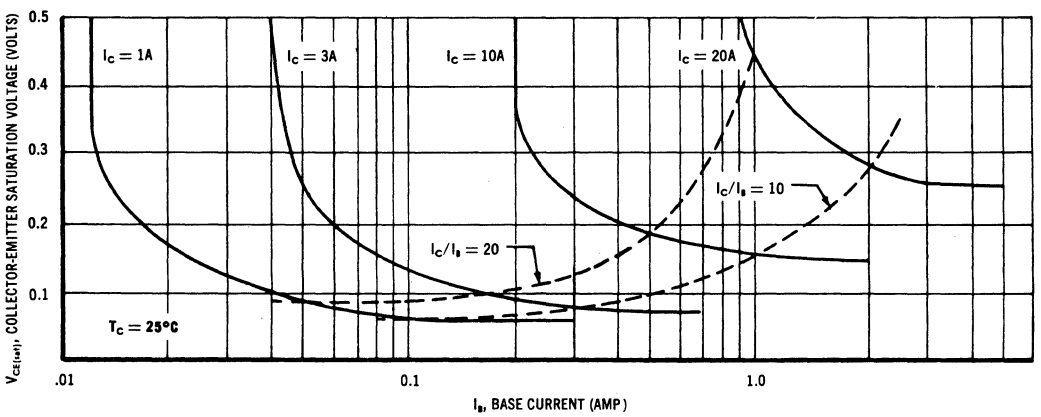


FIG 6 — COLLECTOR-EMITTER SATURATION VOLTAGE VARIATIONS





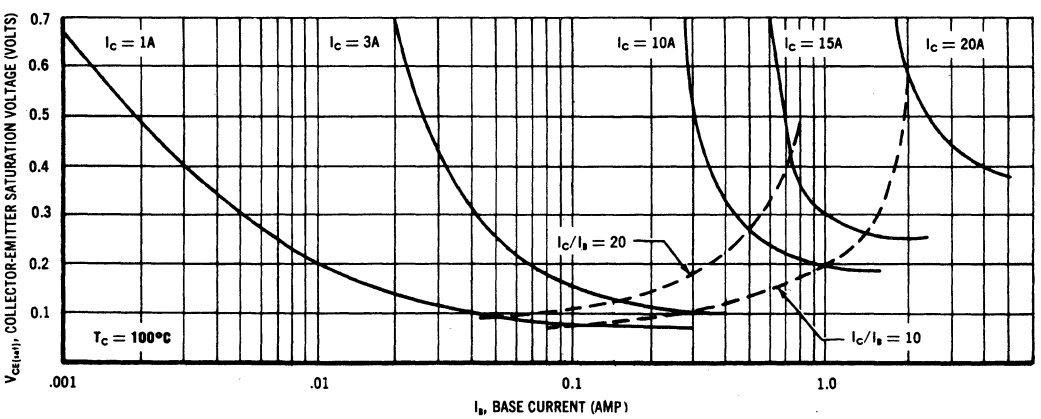
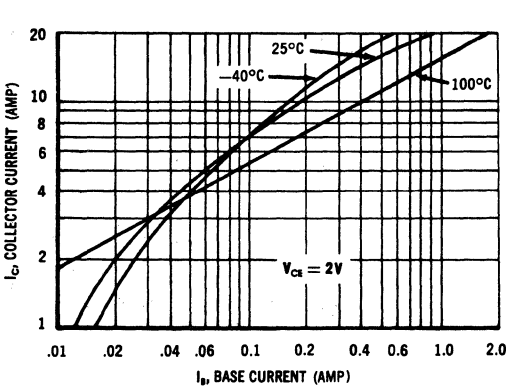


FIGURE 7 — CURRENT VARIATIONS



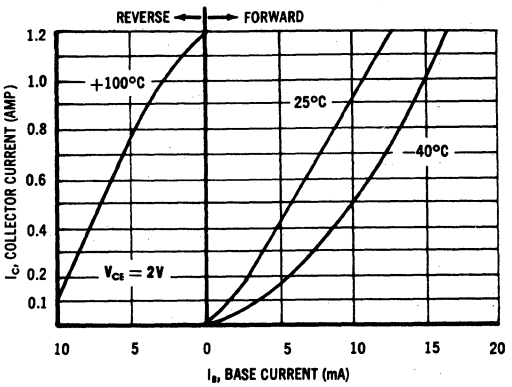
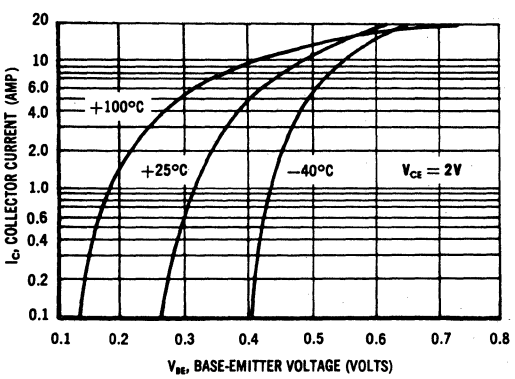


FIGURE 8 — COLLECTOR CURRENT-VOLTAGE VARIATION



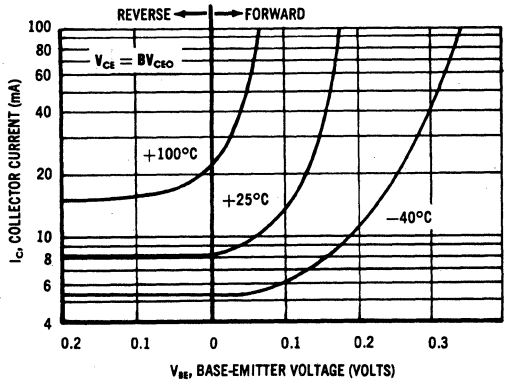


FIG 9 — BASE CURRENT-VOLTAGE VARIATIONS

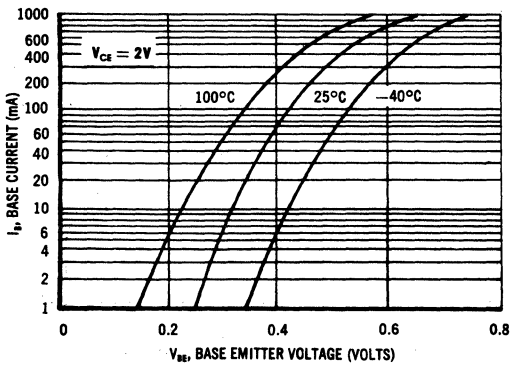


FIGURE 10 CURRENT-GAIN VARIATIONS

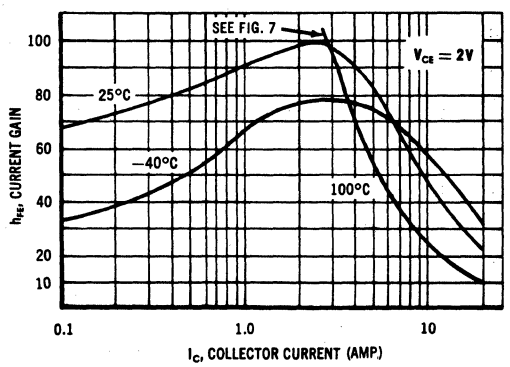


FIG 11 — RISE and FALL TIME vs COLLECTOR CURRENT

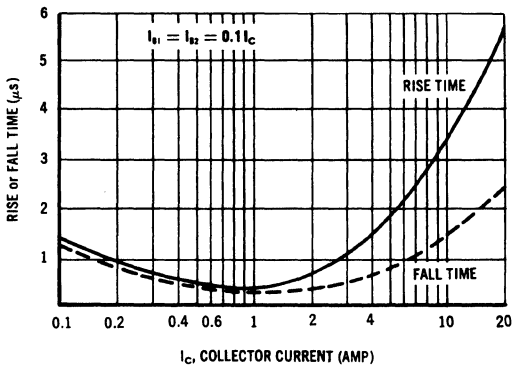


FIG 12 — STORAGE TIME vs COLLECTOR CURRENT

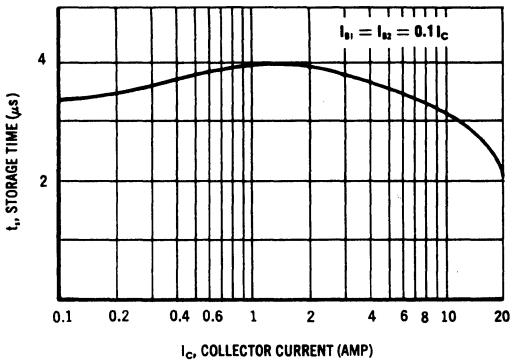
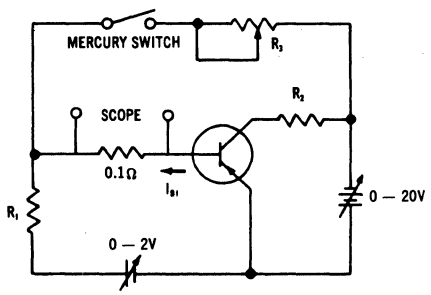


FIG 13 — SWITCHING TIME TEST CIRCUIT



Characteristic	Sym	Max	Unit
Rise Time	t_r	4	μs
Storage Time	t_s	6	μs
Fall Time	t_f	2.5	μs

ADJUST R_1, R_2, R_3, for $I_{B1} = I_{B2} = 0.1 I_C$

PULSE CONDITIONS; $I_C = 5$ AMP, $I_{B1} = 0.5$ AMP

Switching times shown are for constant current drive conditions. Faster times can be realized by the use of a lower source impedance or a speed-up capacitor. See Chapter 5 of the Motorola Switching Handbook for a more detailed explanation.

FIG 14 — CURRENT GAIN — BANDWIDTH PRODUCT vs COLLECTOR CURRENT

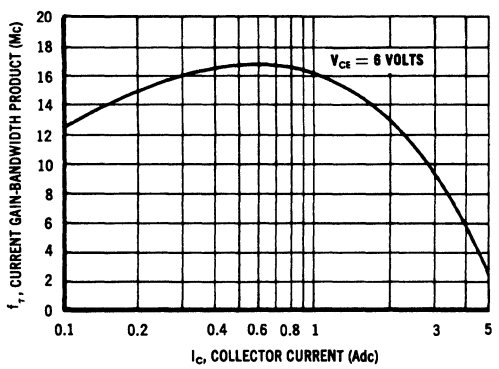
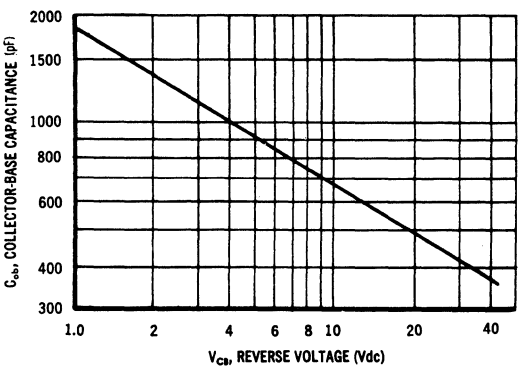


FIG 15 — OUTPUT CAPACITANCE vs REVERSE VOLTAGE



2N2837, 2N2838

For Specifications, See 2N2800 Data.