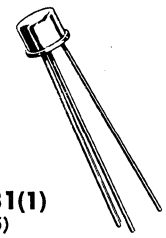
2N524 thru 2N527 (GERMANIUM)



CASE 31(1)
(TO-5)

Base connected to case

PNP germanium transistor for switching and amplifier applications in the audio-frequency range. Available for military and high-reliability industrial purposes.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CB}	45	Vdc
Collector-Emitter Voltage	V_{CEO}	30	Vdc
Emitter-Base Voltage	V_{EB}	15	Vdc
Collector Current	I_C	500	mAdc
Storage and Operating Temperature	T_{stg}, T_J	-65 to +100	°C
Collector Dissipation @ 25°C Ambient	P_D	225	mW
Thermal Resistance Junction to Ambient	θ_{JA}	0.333	°C/mW
Thermal Resistance (infinite heat sink)	θ_{JC}	0.15	°C/mW

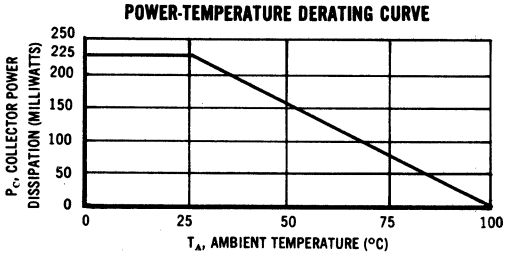
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristics		Symbol	Min	Max	Unit
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0)		I_{CBO}	-	10	μAdc
Emitter Cutoff Current (V_{EB} = 15 Vdc, I_C = 0)		I_{EBO}	-	10	μAdc
Collector-Emitter Breakdown Voltage (I_C = 0.6 mAdc, R_{BE} = 10K)		BV_{CER}	30	-	Vdc
Collector-Emitter Reach Through (Punch-Thru) Voltage (V_{EB} = 1 Vdc, VTVM Z ≥ 1 Megohm)		V_{RT}	30	-	Vdc
Static Forward-Current Transfer Ratio (V_{CE} = 1 Vdc, I_C = 20 mAdc)		h_{FE}			
	2N524		25	42	-
	2N525		34	65	-
	2N526		53	90	-
	2N527		72	121	-
Small-Signal Short-Circuit Forward Current Transfer Ratio Frequency Cutoff (V_{CB} = 5 Vdc, I_E = 1 mAdc)		$f_{\alpha b}$			
	2N524		0.8	5.0	MHz
	2N525		1.0	5.5	
	2N526		1.3	6.5	
	2N527		1.5	7.0	
Output Capacitance (V_{CB} = 5 Vdc, I_E = 1 mAdc, f = 1 MHz)		C_{ob}	5.0	40	pF
Small-Signal Open Circuit Output Admittance (V_{CB} = 5 Vdc, I_E = 1 mAdc, f = 1 kHz)		h_{ob}			
	2N524		0.10	1.3	μmho
	2N525		0.10	1.2	
	2N526		0.10	1.0	
	2N527		0.10	0.9	
Small-Signal Open Circuit Reverse Transfer Voltage Ratio (V_{CB} = 5 Vdc, I_E = 1 mAdc, f = 1 kHz)		h_{rb}			
	2N524		1.0	10	$X10^{-4}$
	2N525		1.0	11	
	2N526		1.0	12	
	2N527		1.0	14	
Small-Signal Short Circuit Input Impedance (V_{CB} = 5 Vdc, I_E = 1 mAdc, f = 1 kHz)		h_{ib}			
	2N524		26	36	ohms
	2N525		26	35	
	2N526		26	33	
	2N527		26	31	
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$			
(I_B = 2 mAdc, I_C = 20 mAdc)	2N524				
(I_B = 1.33 mAdc, I_C = 20 mAdc)	2N525		-	130	mVdc
(I_B = 1.0 mAdc, I_C = 20 mAdc)	2N526		-	130	
(I_B = 0.67 mAdc, I_C = 20 mAdc)	2N527		-	130	
			-	130	
Base Input Voltage (V_{CE} = 1 Vdc, I_C = 20 mAdc)		V_{BE}			
	2N524		220	320	mVdc
	2N525		200	300	
	2N526		190	280	
	2N527		180	260	

ELECTRICAL CHARACTERISTICS (continued)

Characteristics		Symbol	Min	Max	Unit
Noise Figure (V_{CB} = 5 Vdc, I_E = 1 mAdc, f = 1 kHz, BW = 1 Hz		NF	-	15	dB
Small-Signal Short-Circuit Forward-Current Transfer Ratio (V_{CE} = 5 Vdc, I_E = 1 mAdc, f = 1 kHz)	2N524	h_{fe}	18	41	-
	2N525		30	64	
	2N526		44	88	
	2N527		60	120	

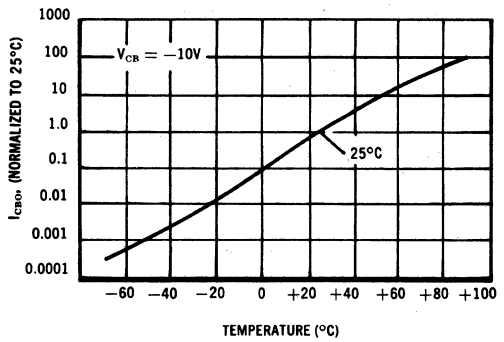
POWER-TEMPERATURE DERATING CURVE



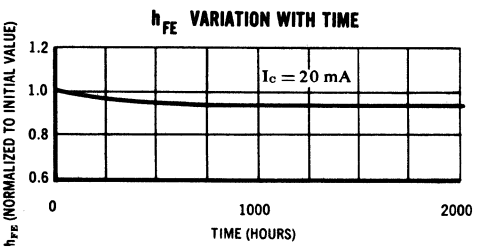
The maximum continuous power is related to maximum junction temperature by the thermal resistance factor.
This curve has a value of 225mW at case temperatures of 25°C and is 0 mW at 100°C with a linear relation between the two temperatures such that:

$$\text{allowable } P_D = \frac{100° - T_A}{0.333}$$

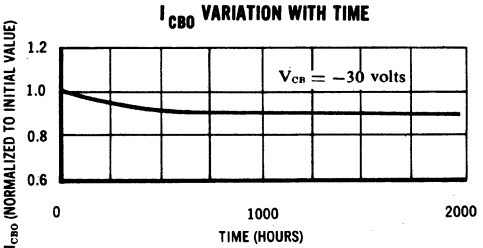
COLLECTOR CUTOFF CURRENT versus TEMPERATURE



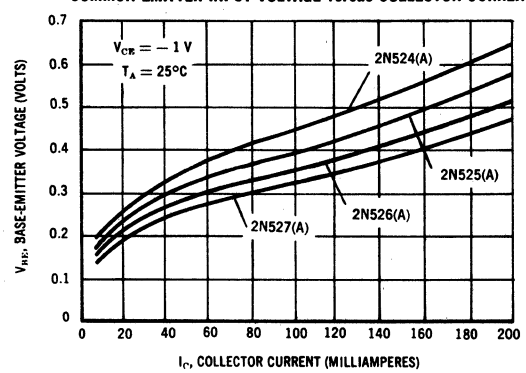
h_{FE} VARIATION WITH TIME



I_{CBO} VARIATION WITH TIME



COMMON EMITTER INPUT VOLTAGE versus COLLECTOR CURRENT



D-C BASE CURRENT GAIN versus COLLECTOR CURRENT