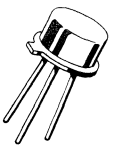
2N5058S (SILICON)

NPN SILICON ANNULAR TRANSISTORS

. . . designed for high-voltage amplifier and driver applications.

- High Collector-Emitter Breakdown Voltage — BV_{CEO} = 300 Vdc (Min) — 2N5058S
- DC Current Gain Specified — 5.0 mAdc to 100 mAdc
- Collector-Emitter Saturation Voltage — $V_{CE(sat)}$ = 1.0 Vdc (Max) @ I_C = 30 mAdc

NPN SILICON AMPLIFIER/DRIVER TRANSISTORS



*MAXIMUM RATINGS

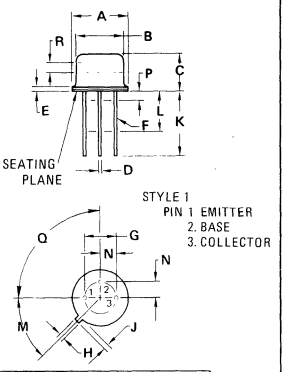
Rating	Symbol	2N5058S	2N5059S	Unit
Collector-Emitter Voltage	V_{CEO}	300	250	Vdc
Collector-Base Voltage	V_{CB}	300	250	Vdc
Emitter-Base Voltage	V_{EB}	7.0	6.0	Vdc
Collector Current — Continuous	I_C	150		mAdc
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.0 6.67		Watt mW/°C
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	5.0 33.3		Watts mW/°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 Ambient	$R_{\theta JA}$(1)	150	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	30	°C/W

*Indicates JEDEC Registered Data

(1) $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.



DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.864	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	–	0.500	–
L	6.35	–	0.250	–
M	45° NOM		45° NOM	
P	–	1.27	–	0.050
Q	90° NOM		90° NOM	
R	2.54	–	0.100	–

CASE 79-02
TO-39
All JEDEC notes and dimensions apply.

*ELECTRICAL CHARACTERISTICS (T_A 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (1)		BV_{CEO}			Vdc
(I_C = 30 mAdc, I_B = 0)	2N5058S		300	–	
	2N5059S		250	–	
Collector-Base Breakdown Voltage		BV_{CBO}			Vdc
(I_C = 100 μAdc, I_E = 0)	2N5058S		300	–	
	2N5059S		250	–	
Emitter-Base Breakdown Voltage		BV_{EBO}			Vdc
(I_E = 100 μAdc, I_C = 0)	2N5058S		7.0	–	
	2N5059S		6.0	–	
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 100 Vdc, I_E = 0)			–	0.05	
(V_{CB} = 100 Vdc, I_E = 0, T_A = +125°C)			–	20	
Emitter Cutoff Current		I_{EBO}			nAdc
(V_{BE} = 5.0 Vdc, I_C = 0)			–	10	
ON CHARACTERISTICS (1)					
DC Current Gain		h_{FE}			–
(I_C = 5.0 mAdc, V_{CE} = 25 Vdc)	2N5058S		10	–	
	2N5059S		10	–	
(I_C = 30 mAdc, V_{CE} = 25 Vdc)	2N5058S		35	150	
	2N5059S		30	150	
(I_C = 30 mAdc, V_{CE} = 25 Vdc, T_A = -55°C)	2N5058S		10	–	
(I_C = 100 mAdc, V_{CE} = 25 Vdc)	2N5058S		35	–	
	2N5059S		30		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 30 mAdc, I_B = 3.0 mAdc)			–	1.0	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
(I_C = 30 mAdc, I_B = 3.0 mAdc)			–	0.85	
Base-Emitter On Voltage		$V_{BE(on)}$			Vdc
(I_C = 30 mAdc, V_{CE} = 25 Vdc)			–	0.82	
DYNAMIC CHARACTERISTICS					
Current-Gain – Bandwidth Product (2)		f_T			MHz
(I_C = 10 mAdc, V_{CE} = 25 Vdc, f = 20 MHz)			30	160	
Collector-Base Capacitance		C_{cb}			pF
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)			–	10	
Emitter-Base Capacitance		C_{eb}			pF
(V_{BE} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)			–	75	

*Indicates JEDEC Registered Data

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

(2) f_T is defined as the frequency at which $|h_{fe}|$ extropolates to unity.