

The RF Line PNP Silicon High-Frequency Transistor

... designed for amplifier, oscillator or frequency multiplier applications in industrial equipment. Suitable for use as a Class A, B or C output driver or pre-driver stages in VHF and UHF.

- Low Cost SORF Plastic Surface Mount Package
- Guaranteed RF Specification — $|S_{21}|^2$
- S-Parameter Characterization
- Tape and Reel Packaging Options Available by adding suffix:
R1 suffix = 500 units per reel
R2 suffix = 2,500 units per reel

MRF5583

**$I_C = -500$ mA
SURFACE MOUNT
HIGH-FREQUENCY
TRANSISTOR
PNP SILICON**



**CASE 751-05, STYLE 1
(SO-8)**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-30	V
Collector-Base Voltage	V_{CBO}	-30	V
Emitter-Base Voltage	V_{EBO}	-3.0	V
Collector Current — Continuous	I_C	-500	mA
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	°C

DEVICE MARKING

MRF5583 = 5583

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 8.0	Watt mW/°C
Storage Temperature	T_{stg}	150	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	125	°C/W

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = -10$ mA)	$V_{(BR)CEO}$	-30	—	—	V
Collector-Base Breakdown Voltage ($I_C = -10$ μA)	$V_{(BR)CBO}$	-30	—	—	V
Emitter-Base Breakdown Voltage ($I_E = -100$ μA)	$V_{(BR)EBO}$	-3	—	—	V
Collector Cutoff Current ($V_{CB} = -20$ V)	I_{CBO}	—	—	-1.0	μA
Emitter Cutoff Current ($V_{EB} = -2.0$ V)	I_{EBO}	—	—	-0.5	μA

ON CHARACTERISTICS

DC Current Gain ($I_C = -40$ mA, $V_{CE} = -2.0$ V) ($I_C = -100$ mA, $V_{CE} = -2.0$ V) ($I_C = -300$ mA, $V_{CE} = -5.0$ V)	h_{FE}	20 25 15	— — —	— 100 —	—
Collector-Emitter Saturation Voltage ($I_C = -100$ mA, $I_B = -10$ mA)	$V_{CE(sat)}$	—	—	0.8	V
Base-Emitter On Voltage ($I_C = -100$ mA, $V_{CE} = -2.0$ V)	$V_{BE(on)}$	—	—	1.8	V

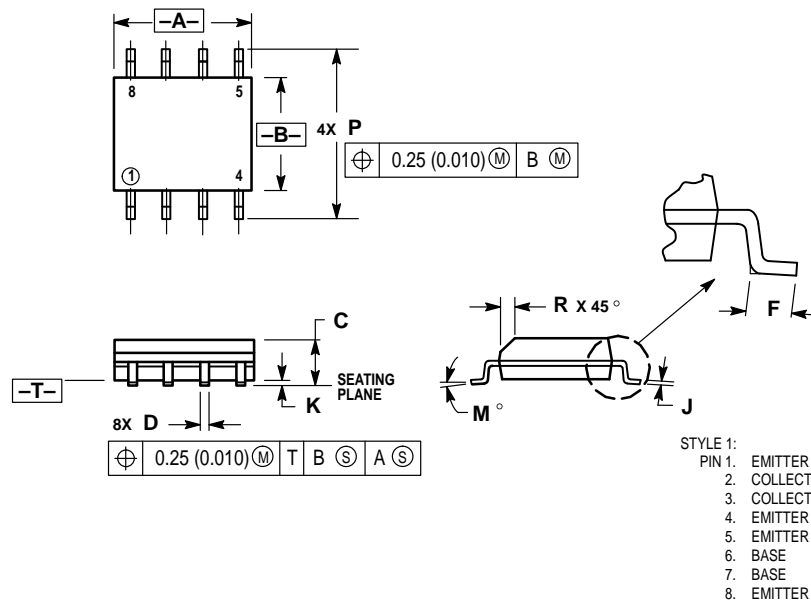
SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = -35$ mA, $V_{CE} = -15$ V, $f = 100$ MHz)	f_T	—	2100	—	MHz
Insertion Gain ($V_{CE} = -15$ V, $I_C = -35$ mA, $f = 250$ MHz)	$ S_{21} ^2$	12.5	15.5	—	dB

V _{CE} (Volts)	I _C (mA)	f (MHz)	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
			S ₁₁	∠	S ₂₁	∠	S ₁₂	∠	S ₂₂	∠
-15	-35	10	0.47	-57	64.7	155	0.01	60	0.83	-26
		30	0.59	-116	42.2	126	0.02	44	0.56	-58
		50	0.63	-140	28.8	113	0.02	39	0.39	-74
		70	0.64	-151	21.4	105	0.02	42	0.30	-82
		100	0.65	-161	15.4	97	0.02	45	0.24	-80
		300	0.67	179	5.23	79	0.05	58	0.13	-109
		500	0.67	168	3.11	66	0.07	60	0.20	-114
		700	0.67	160	2.24	57	0.09	60	0.24	-116
		1000	0.66	146	1.54	44	0.13	60	0.30	-123

Table 1. Common Emitter S-Parameters


PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.196
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.18	0.25	0.007	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

CASE 751-05
 ISSUE M

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MRF5583/D

