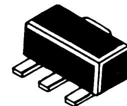
MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

MXR3866

Die Source Same as 2N3866

RF TRANSISTOR
NPN SILICON



CASE 345-01, STYLE 1
SOT-89

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	30	V
Collector-Base Voltage	V_{CBO}	55	V
Emitter-Base Voltage	V_{EBO}	3.5	V
Collector Current — Continuous	I_C	0.4	A
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, T_A = 25°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

*Package mounted on 99.5% alumina 10 x 12 x 0.6 mm.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

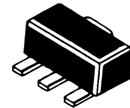
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C = 5.0 mA, R_{BE} = 10 Ω)	$V_{(BR)CER}$	55	—	V
Collector-Emitter Sustaining Voltage (I_C = 5.0 mA)	$V_{CEO(sus)}$	30	—	V
Collector-Base Breakdown Voltage (I_C = 0.1 mA)	$V_{(BR)CBO}$	55	—	V
Emitter-Base Breakdown Voltage (I_E = 0.1 mA)	$V_{(BR)EBO}$	3.5	—	V
Collector Cutoff Current (V_{CE} = 28 V)	I_{CEO}	—	20	μA
Collector Cutoff Current (V_{CE} = 55 V, V_{BE} = 1.5 V)	I_{CEX}	—	100	μA
ON CHARACTERISTICS				
DC Current Gain (I_C = 0.36 A, V_{CE} = 5.0 V) (I_C = 0.05 A, V_{CE} = 5.0 V)	h_{FE}	 5.0 10	 — 200	—
Collector-Emitter Saturation Voltage (I_C = 100 mA, I_B = 20 mA)	$V_{CE(sat)}$	—	1.0	V
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I_C = 50 mA, V_{CE} = 15 V, f = 200 MHz)	f_T	500	—	MHz
Output Capacitance (V_{CB} = 30 V, f = 1.0 MHz)	C_{obo}	—	3.0	pF

MXR5160

Die Source Same as 2N5160

RF TRANSISTOR

PNP SILICON



CASE 345-01, STYLE 1
SOT-89

3

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	V
Collector-Base Voltage	V_{CBO}	60	V
Emitter-Base Voltage	V_{EBO}	4.0	V
Collector Current — Continuous	I_C	0.4	A
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25°C$ 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

*Package mounted on 99.5% alumina 10 x 12 x 0.6 mm.

ELECTRICAL CHARACTERISTICS ($T_A = 25°C$ unless otherwise noted.)

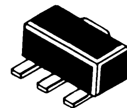
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage ($I_C = 5.0$ mA)	$V_{CEO(sus)}$	40	—	V
Emitter-Base Breakdown Voltage ($I_E = 0.1$ mA)	$V_{(BR)EBO}$	4.0	—	V
Collector Cutoff Current ($V_{CB} = 28$ V)	I_{CBO}	—	1.0	μA
Collector Cutoff Current ($V_{CE} = 60$ V)	I_{CES}	—	0.1	mA
Emitter Cutoff Current ($V_{CE} = 28$ V)	I_{CEO}	—	20	μA
ON CHARACTERISTICS				
DC Current Gain ($I_C = 50$ mA, $V_{CE} = 5.0$ V)	h_{FE}	10	—	—
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ($I_C = 50$ mA, $V_{CE} = 15$ V, f = 200 MHz)	f_T	500	—	MHz

MXR5583

Die Source Same as 2N5583

HIGH FREQUENCY RF TRANSISTOR

PNP SILICON



CASE 345-01, STYLE 1
SOT-89

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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, T_A = 25°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

*Package mounted on 99.5% alumina 10 x 12 x 0.6 mm.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(1) (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)	$V_{(BR)EBO}$	3.0	—	V
Collector Cutoff Current (V_{CB} = 20 V)	I_{CBO}	—	50	nA
Emitter Cutoff Current (V_{EB} = 2.0 V)	I_{EBO}	—	0.5	μA
ON CHARACTERISTICS				
DC Current Gain (1) (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 (1) (I_C = 100 mA, I_B = 10 mA)	$V_{CE(sat)}$	—	0.8	V
Base-Emitter On Voltage (1) (I_C = 100 mA, V_{CE} = 2.0 V)	$V_{BE(on)}$	—	1.8	V
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I_C = 40 mA, V_{CE} = 10 V, f = 100 MHz) (I_C = 100 mA, V_{CE} = 10 V, f = 100 MHz)	f_T	 1000 1300	 — —	MHz

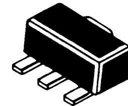
(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

MXR5943

Die Source Same as 2N5943

RF TRANSISTOR

NPN SILICON



CASE 345-01, STYLE 1
SOT-89

3

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	30	V
Collector-Base Voltage	V_{CBO}	40	V
Emitter-Base Voltage	V_{EBO}	3.5	V
Collector Current — Continuous	I_C	400	mA
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, T_A = 25°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

*Package mounted on 99.5% alumina 10 x 12 x 0.6 mm.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C = 5.0 mA)	$V_{(BR)CEO}$	30	—	V
Collector-Base Breakdown Voltage (I_C = 100 μA)	$V_{(BR)CBO}$	40	—	V
Emitter-Base Breakdown Voltage (I_E = 100 μA)	$V_{(BR)EBO}$	3.5	—	V
Collector Cutoff Current (V_{CE} = 20 V)	I_{CEO}	—	50	μA
Collector Cutoff Current (V_{CB} = 15 V)	I_{CBO}	—	10	μA
ON CHARACTERISTICS				
DC Current Gain (I_C = 50 mA, V_{CE} = 15 V)	h_{FE}	25	300	—
Collector-Emitter Saturation Voltage (I_C = 100 mA, I_B = 10 mA)	$V_{CE(sat)}$	—	0.2	V
Base-Emitter Saturation Voltage (I_C = 100 mA, I_B = 10 mA)	$V_{BE(sat)}$	—	1.0	V
SMALL SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I_C = 25 mA, V_{CE} = 15 V, f = 200 MHz) (I_C = 50 mA, V_{CE} = 15 V, f = 200 MHz) (I_C = 100 mA, V_{CE} = 15 V, f = 200 MHz)	f_T	 1000 1200 1000	 — — —	MHz