

**MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA**



*Discrete
Military
Operation*

PRELIMINARY DATA

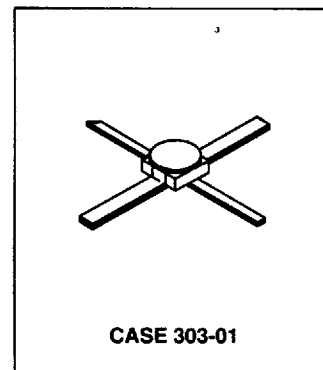
MRFS2857HXV/HS

PROCESSED TO MIL-S-19500/343

SURFACE MOUNTABLE

R.F. TRANSISTOR

15 VOLT, 40 MILLIAMPERE BIPOLAR NPN



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	15	V _{dc}
Collector-Base Voltage	V _{CBO}	30	V _{dc}
Emitter-Base Voltage	V _{EBO}	3.0	V _{dc}
Collector Current — Continuous	I _C	40	mA _{dc}
Device Dissipation @ T _A = 25°C Derate above 25°C	P _T	200 1.14	mW W/°C
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to +200	°C

This document contains information on a new product. Specifications and information herein are subject to change without notice.

MRFS2857HXV/HS

T-31-15

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless noted)				
Characteristic	Symbol	Min	Max	Unit
Collector-Emitter Breakdown Voltage $I_C = 3.0 \text{ mA}, I_E = 0$	$V_{(BR)CEO}$	15	—	Vdc
Collector-Base Breakdown Voltage $I_C = 1.0 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	30	—	Vdc
Emitter-Base Breakdown Voltage $I_E = 10 \mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current $V_{CB} = 15 \text{ Vdc}, I_E = 0$ $V_{CB} = 15 \text{ Vdc}, I_E = 0, T_A = 150^\circ\text{C}$	I_{CBO}	— —	0.01 1.0	μA
Collector Cutoff Current $V_{CE} = 16 \text{ Vdc}$	I_{CES}	—	0.1	μA
DC Current Gain $I_C = 3.0 \text{ mA}, V_{CE} = 1.0 \text{ Vdc}$ $I_C = 3.0 \text{ mA}, V_{CE} = 1.0 \text{ Vdc}, T_A = -55^\circ\text{C}$	h_{FE}	30 10	130 —	—
Collector-Emitter Saturation Voltage $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$	$V_{CE(sat)}$	—	0.4	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$	$V_{BE(sat)}$	—	1.0	Vdc
Collector-Base Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 0.1 \text{ to } 1.0 \text{ MHz}$	C_{cb}	—	1.0	pF
Small-Signal Current Gain $I_C = 2.0 \text{ mA}, V_{CE} = 6.0 \text{ Vdc}$	h_{fe}	50	220	—
Small-Signal Current Gain, Magnitude $I_C = 5.0 \text{ mA}, V_{CE} = 6.0 \text{ Vdc}, f = 100 \text{ MHz}$	$ h_{fe} $	10	21	—
Common-Emitter Amplifier Power Gain $I_C = 1.5 \text{ mA}, V_{CE} = 6.0 \text{ Vdc}, f = 450 \text{ MHz}$	G_{pe}	12.5	21	dB
Noise Figure $V_{CE} = 8.0 \text{ Vdc}, I_C = 1.5 \text{ mA}, f = 450 \text{ MHz}, R_G = 50 \text{ ohm}$	NF	—	4.5	dB

ASSURANCE TESTING (Pre/Post Burn-In)

Burn-in Test Conditions: $T_A = 25 \pm 3^\circ\text{C}$, $V_{CB} = 15 \text{ Vdc}$, $P_T = 200 \text{ mW}$

Characteristics Tested	Symbol	Min	Max	Unit
Collector Cutoff Current $V_{CE} = 16 \text{ Vdc}$	I_{CES}	—	100	nA
DC Current Gain $I_C = 3.0 \text{ mA}, V_{CE} = 1.0 \text{ Vdc}$	h_{FE}	30	150	—

Delta from Pre-Burn-In Measured Values

Delta Collector Cutoff Current	ΔI_{CES}	100 or 10 whichever is greater	% initial nA
Delta DC Current Gain	Δh_{FE}	± 15	% initial