

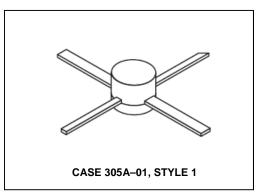
The RF Line NPN Silicon High-Frequency Transistor 1.0W, 400MHz, 28V

M/A-COM Products Released - Rev. 07.07

Designed for wideband amplifier, driver or oscillator applications in military, mobile, and aircraft radio.

- Specified 28 V, 400 MHz characteristics —
 Output power = 1.0 W
 Power gain = 15 dB min.
 Efficiency = 45% typ.
- Emitter ballast and low current density for improved MTBF
- Common emitter for improved stability

Product Image



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V _{CEO}	30	Vdc
Collector-Base Voltage	V _{CBO}	40	Vdc
Emitter-Base Voltage	V _{EBO}	3.0	Vdc
Collector Current — Continuous	Ic	150	mAdc
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	6.1 35	Watts mW/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{0JC}	28.5	°C/W

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

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I _C = 10 mAdc, I _B = 0)	V _{(BR)CEO}	30	_	_	Vdc
Collector-Emitter Breakdown Voltage (I _C = 5.0 mAdc, V _{BE} = 0)	V _{(BR)CES}	35	_	_	Vdc
Collector-Base Breakdown Voltage (I _C = 0.1 mAdc, I _E = 0)	V _{(BR)CBO}	35	_	_	Vdc
Emitter–Base Breakdown Voltage (I _E = 1.0 mAdc, I _C = 0)	V _{(BR)EBO}	3.0	_	_	Vdc
Collector Cutoff Current (V _{CE} = 20 Vdc, I _B = 0)	Iceo	_	_	1.0	mAdc

(continued)

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or tost data may be evailable. Commitment to produce in volume is not guaranteed:

- North America Tel: 800.366.2266 / Fax: 978.366.2266
- Europe Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- Asia/Pacific Tel: 81.44.844.8296 / Fax: 81.44.844.8298
 Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions the land its diffiliates reserve the right to make changes for the product s) of information contained herein without notice.

MRF313



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ELECTRICAL CHARACTERISTICS — continued (T_C = 25°C unless otherwise noted.)

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Characteristic	Symbol	Min	Тур	Max	Unit
ON CHARACTERISTICS	•				
DC Current Gain (I _C = 100 mAdc, V _{CE} = 10 Vdc)	h _{FE}	20	60	150	_
DYNAMIC CHARACTERISTICS	·		•		
Current–Gain — Bandwidth Product (I _C = 100 mAdc, V _{CE} = 20 Vdc, f = 200 MHz)	f _T	_	2.5	_	GHz
Output Capacitance (V _{CB} = 28 Vdc, I _E = 0, f = 1.0 MHz)	C _{ob}	_	3.5	5.0	pF
FUNCTIONAL TESTS	•	•	•	•	•
Common–Emitter Amplifier Power Gain (1) (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	G _{pe}	15	16	_	dB
Collector Efficiency (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	η	_	45	_	%
Series Equivalent Input Impedance (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	Z _{in}	_	6.4 – j4.8	_	Ohms
Series Equivalent Output Impedance (V _{CC} = 28 Vdc, P _{out} = 1.0 W, f = 400 MHz)	Z _{out}	_	75 – j45	_	Ohms

NOTE:

1. Class C

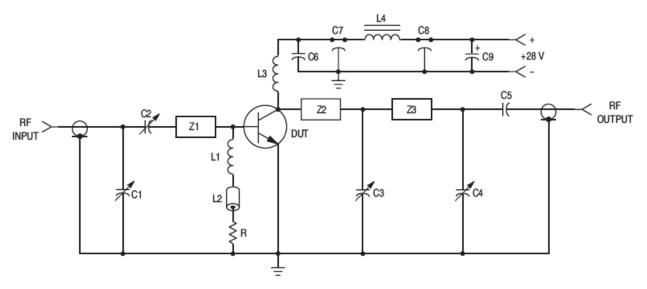
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C1, C2, C4 — 1.0-20 pF JOHANSON 9063

C3 - 1.0-10 pF JOHANSON

C5 — 150 pF Chip

C6 — 0.1 µF C7, C8 — 680 pF Feedthru

C9 — 1.0 μF TANTALUM

L1, L3 - 5 Turns, AWG #20, 1/4" I.D.

L2 — Ferrite Bead, FERROXCUBE

No. 56-590-65/4B

L4 — FERROXCUBE VK200–20/4B

Input/Output Connectors — Type N Board — Glass Teflon, ε = 2.56, t = 0.062" R - 4.7 Ohms, 1/4 W

Z1 — 2.0" x 0.1" MICROSTRIP LINE Z2, Z3 — 2.6" x 0.1" MICROSTRIP LINE

Figure 1. 400 MHz Power Gain Test Circuit

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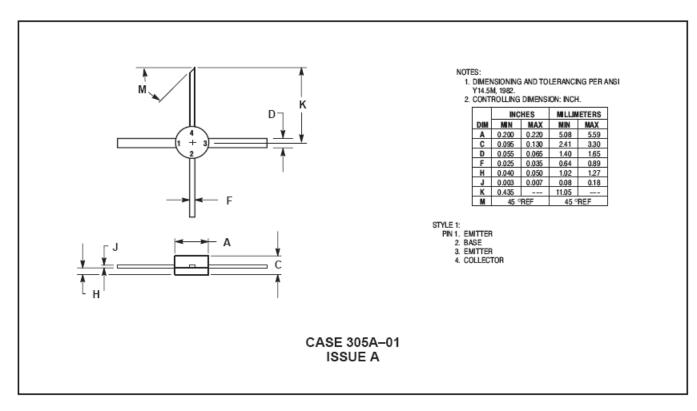
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PACKAGE DIMENSIONS



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