HG Semiconductors

HG RF POWER TRANSISTOR

2SC2559

ROHS Compliance,Silicon NPN POWER TRANSISTOR

FEATURES

- LOW OPERATING VOLTAGE (V_{CC} = 13.5 V)
- TITANIUM-PLATINUM-GOLD METALLIZATION FOR HIGH RELIABILITY
- SUPERIOR RF PERFORMANCE
- HIGH GAIN
- RUGGED VSWR ∞: 1 at V_{CC} = 16 V
- FOR 800 MHz BAND MOBILE RADIO APPLICATIONS
- LOW COST PACKAGES
- HIGH POWER

DESCRIPTION AND APPLICATIONS

NEC's NE0800 series of NPN epitaxial UHF power transistors is designed for large volume mobile radio applications in the 800 MHz band. The series is available in two low cost, rugged packages. High gain, power and efficiency, combined with low cost packages, make the NE0800 series an ideal choice for large volume applications in the 800 MHz mobile radio band.

The series solves the metal migration problem by using NEC's famous Pt-Si/Ti/Pt/Au system rather than conventional aluminum or tungsten-gold metallization. NEC's proprietary fabrication technique employed in the series features ion-implantation base regions, arsenic doped polysilicon emitter structure, porous SiO_2 under bonding pads to reduce parasitic capacitance and silicon nitride passivation (Si_3N_4). These unique systems provide levels of reliability and orders of magnitude greater than conventional systems, even at rated values.

The NE0800 series is a standard grade D device manufactured and screened to levels unique to standard parts. The series offers the engineer the very best in performance, ruggedness and reliability.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	35
V_{CEO}	Collector to Emitter Voltage	V	18
V_{EBO}	Emitter to Base Voltage	V	3
I_C	Collector Current NE080190,91 NE080490,91 NE081090,91	 A A A	 0.5 1.5 3
$R_{\theta JC}$	Thermal Resistance (Junction-to-Case) NE080190,91 NE080490,91 NE081090,91	 °C/W °C/W °C/W	 21 10 5
P_T	Total Power Dissipation (T_C = 25°C) NE080190,91 NE080490,91 NE081090,91	 W W W	 8.3 17.5 35
T_J	Junction Temperature	°C	200
T_{STG}	Storage Temperature	°C	-65 to +150

Note : Above parameters , ratings , limits and conditions are subject to change.

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PERFORMANCE SPECIFICATIONS (T_A = 25°C)

PART NUMBER EIAJ[1] REGISTERED NUMBER PACKAGE OUTLINE			NE080190,91 2SC2558K,M 90,91			NE080490,91 2SC2559K,M 90,91			NE081090,91 2SC2850K,M 90,91		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
P_{OUT}	Output Power at V_{CC} = 13.5 V, f = 860 MHz P_{IN} = 20 dBm P_{IN} = 29.5 dBm P_{IN} = 36 dBm	 dBm dBm dBm	 30	 32.5		 36	 37.8		 39.5	 40.2	
η_C	Collector Efficiency at V_{CC} = 13.5 V, f = 860 MHz P_{IN} = 20 dBm P_{IN} = 29.5 dBm P_{IN} = 36 dBm	 % % %	 50	 55		 55	 60		 65	 75	
VSWR	Voltage Standing Wave Ratio at V_{CC} = 13.5 V, f = 860 MHz P_{OUT} = 32 dBm P_{OUT} = 37.5 dBm P_{OUT} = 41 dBm		 ∞			 ∞			 ∞		
BV_{CBO}	Collector to Base Breakdown Voltage at I_E = 0 I_C = 100 µA I_C = 1 mA I_C = 2 mA	 V V V	 35	 		 35	 		 35	 	
BV_{CEO}	Collector to Emitter Breakdown Voltage at I_B = 0 I_C = 1 mA I_C = 10 mA I_C = 20 mA	 V V V	 18	 		 18	 		 18	 	
BV_{EBO}	Emitter to Base Breakdown Voltage at I_C = 0 I_E = 100 µA I_E = 1 mA I_E = 2 mA	 V V V	 3	 		 3	 		 3	 	
I_{CBO}	Collector Cutoff Current at V_{CB} = 20 V, I_E = 0	mA			0.1			0.2			0.4
I_{EBO}	Emitter Cutoff Current at V_{EB} = 2 V, I_C = 0	mA			0.1			0.2			0.4
h_{FE}	DC Forward Current Gain at V_{CE} = 10 V I_C = 100 mA (pulsed) I_C = 300 mA (pulsed) I_C = 500 mA (pulsed)		 20	 60	 200	 20	 60	 200	 20	 60	 200
C_{OB}	Output Capacitance at V_{CB} = 10 V, I_E = 0, f = 1 MHz[2]	pF		2.3	3.5		7	10		14	20

Note : Above parameters , ratings , limits and conditions are subject to change.