DATA SHEET

NEC

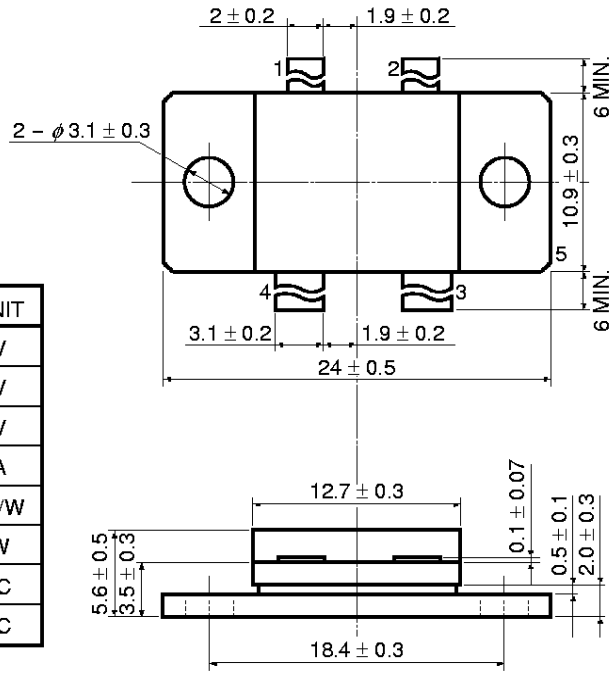
SILICON POWER TRANSISTOR
2SC3218-M

NPN SILICON EPITAXIAL TRANSISTOR FOR 860-MHz WIDEBAND POWER AMPLIFIER INDUSTRIAL USE

FEATURES

- High gain and high power output at 860 MHz
  P_{out} = 52 W @ V_{CC} = 28 V, P_{in} = 10 W, class AB
- Push-pull structure allows easy design of wideband amplifier
- Internal emitter balance resistor
- Internal impedance matching circuit
- High reliability due to gold electrodes

PACKAGE DIMENSIONS (in millimeters)



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	V_{CBO}	55	V
Collector to Emitter Voltage	V_{CEO}	32	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	15	A
Thermal Resistance (junction to case)	$R_{th\ (j\text{-}c)}$	1.09	°C/W
Total Power Dissipation	$P_{T\ (T_C = 25\ °C)}$	160	W
Junction Temperature	T_j	200	°C
Storage Temperature	T_{stg}	-65 to +150	°C

PIN CONNECTIONS

1. Collector
2. Collector
3. Base
4. Base
5. Emitter (heat sink)

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 30 V, I_E = 0			4	mA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 2 V, I_C = 0			4	mA
DC Current Gain	h_{FE} Note	V_{CE} = 10 V, I_C = 1 A (pulse)	20	60	120	–
Output Power	P_{out}	f = 860 MHz, V_{CC} = 28 V	46.2	47.2		dBm
		P_{in} = 10 W (40 dBm)	42	52		W
Collector Efficiency	η_C	I_q = 150 mA × 2, class AB	40	50		%
Feedback Capacitance	C_{re} Note	V_{CB} = 28 V, f = 1 MHz, I_E = 0		40	60	pF

Note Per unit

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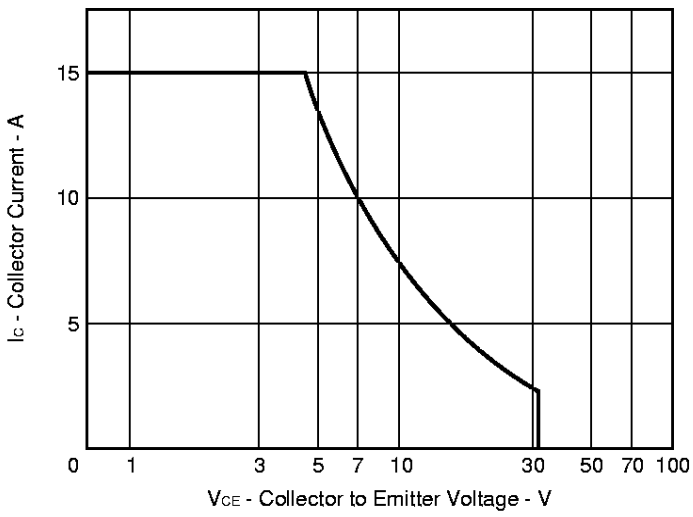
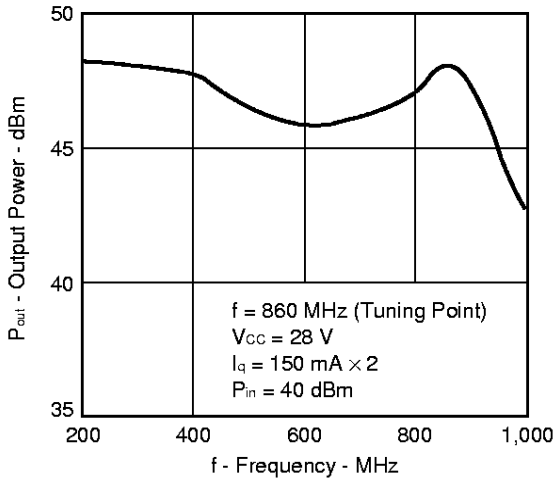
TYPICAL CHARACTERISTICS (T_A = 25 °C)

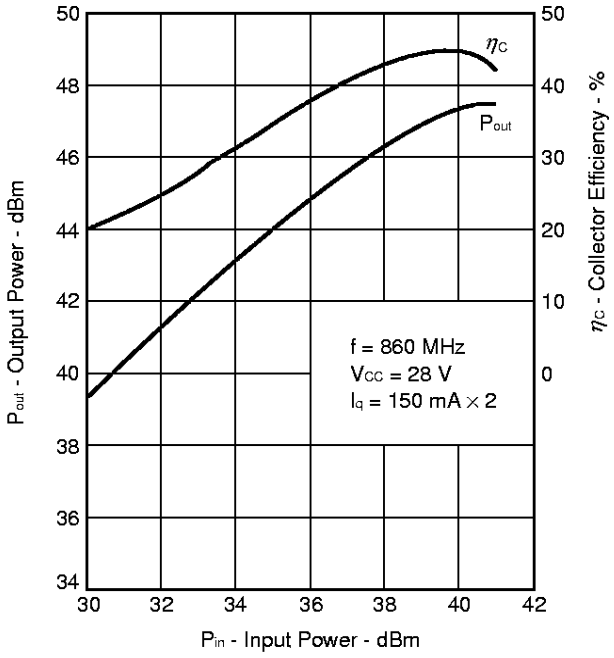
FORWARD BIAS SAFE OPERATING AREA (DC)



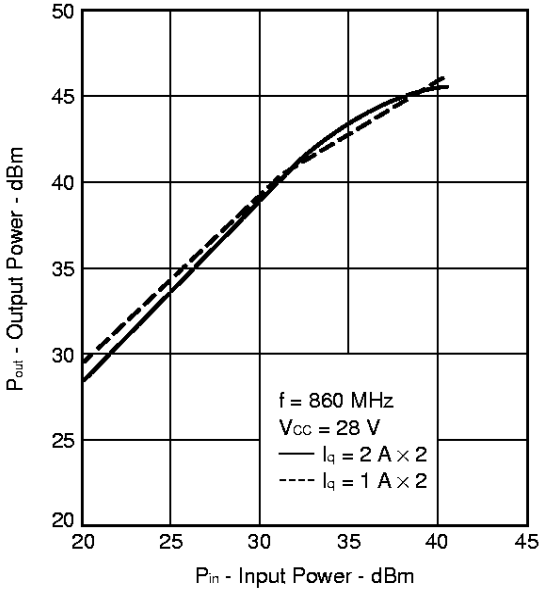
FREQUENCY RESPONSE



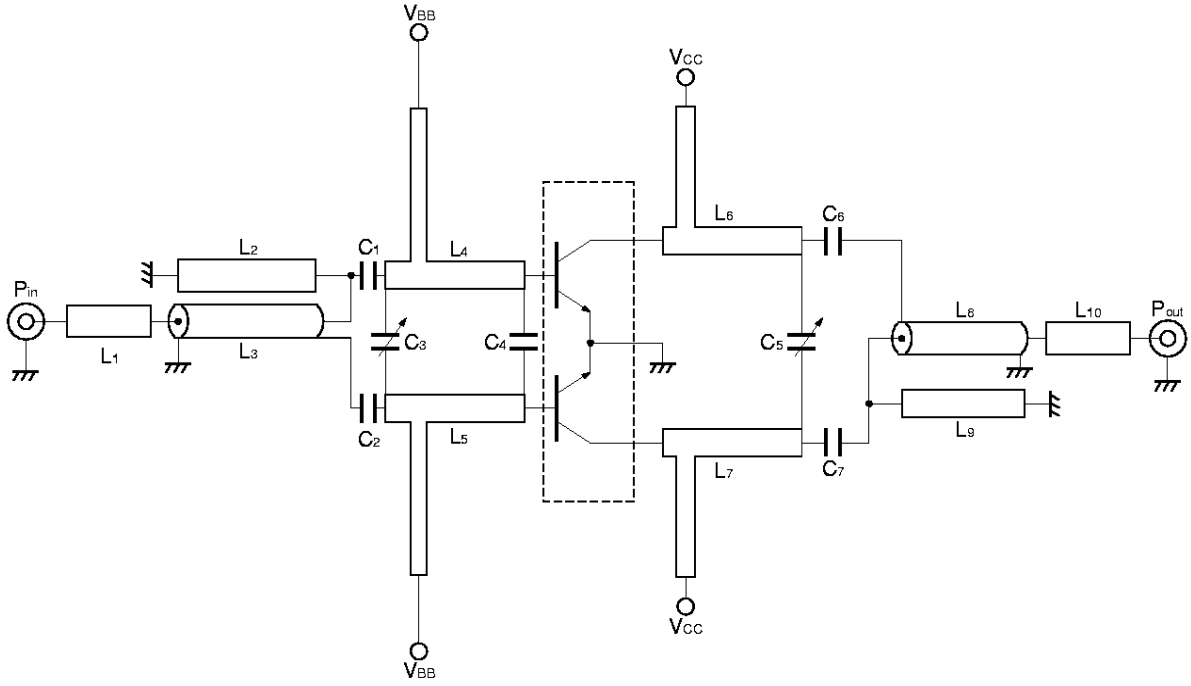
OUTPUT POWER AND COLLECTOR EFFICIENCY vs. INPUT POWER



OUTPUT POWER vs. INPUT POWER

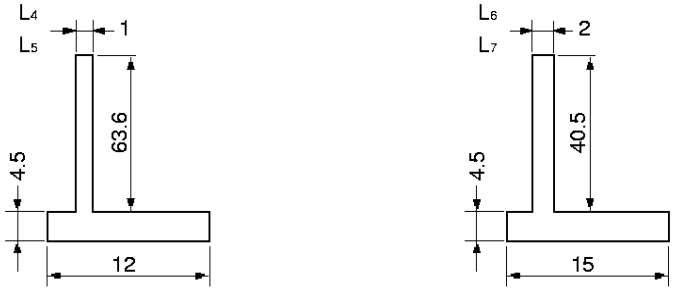


APPLICATION CIRCUIT EXAMPLE



$C_1 = C_2 = 20$ pF
$C_3 = 20$ pF
$C_4 = 10$ pF
$C_5 = 20$ pF
$C_6 = C_7 = 75$ pF

L_1	L_{10}	Micro-strip line	23.6 × 4.5 mm
L_2	L_9	50 Ω Semi-rigid cable	70 mm
L_4 to L_7		Micro-strip line	(in millimeters)



Substrate material: Teflon glass t = 1.6 mm

CAUTIONS ON HANDLING DEVICES

This device employs beryllia ceramics (beryllium oxide) internally. Inhalation of beryllium oxide powder or vapor into the human respiratory system may cause hazards such as breathing difficulties and other problems.

Therefore, do not disintegrate or chemically process this device.

Moreover, when disposing of this device, be sure to separate it from general industrial waste and domestic garbage.

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