NEC

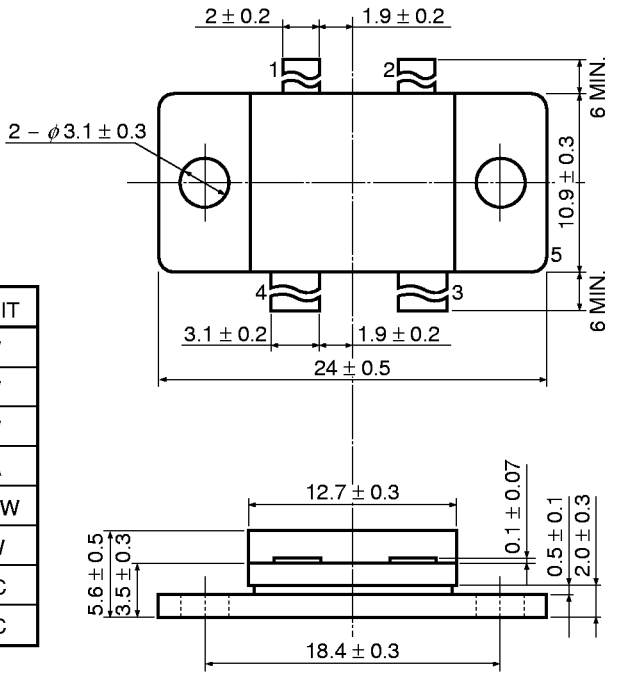
SILICON POWER TRANSISTOR
2SC3218-M

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)



PIN CONNECTIONS

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

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

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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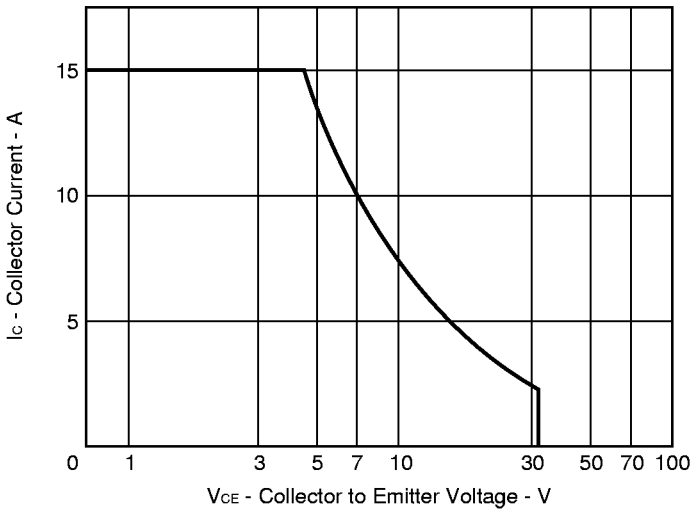
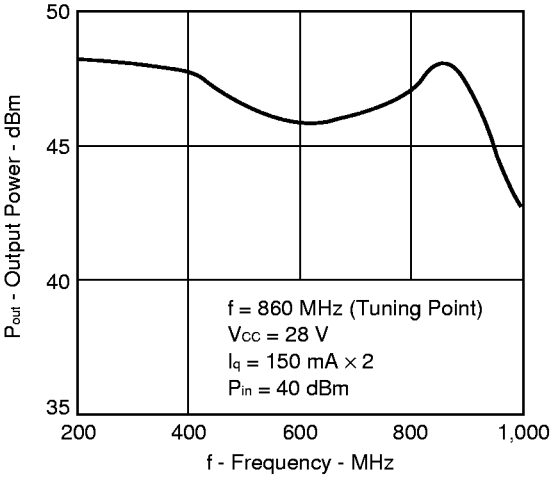
TYPICAL CHARACTERISTICS (T_A = 25 °C)

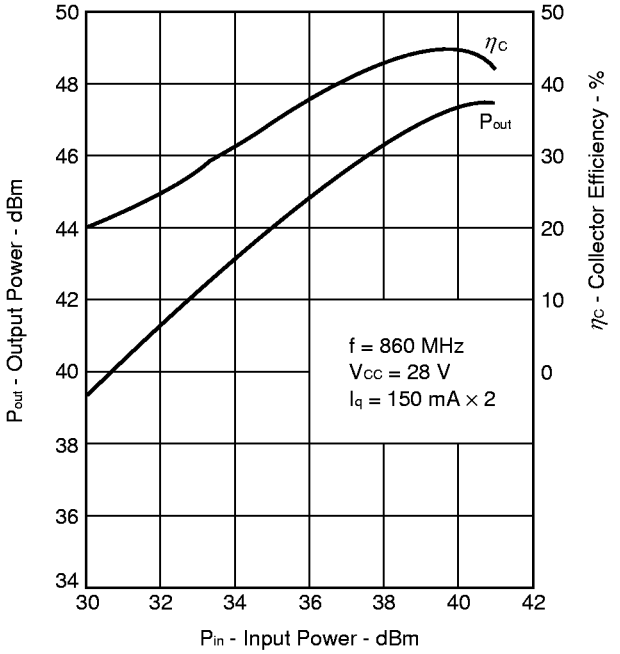
FORWARD BIAS SAFE OPERATING AREA (DC)



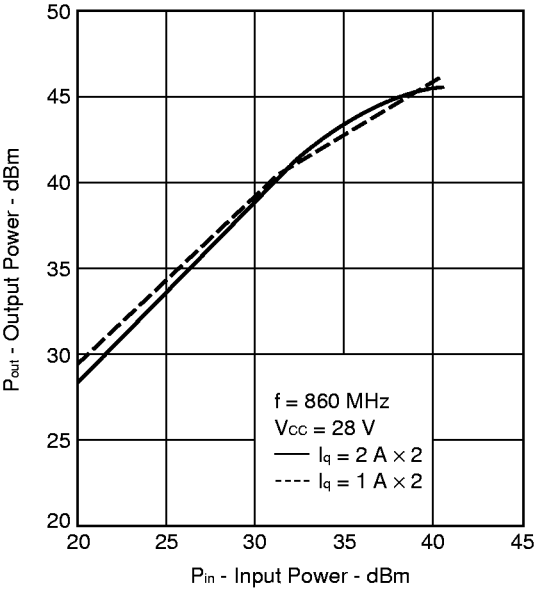
FREQUENCY RESPONSE



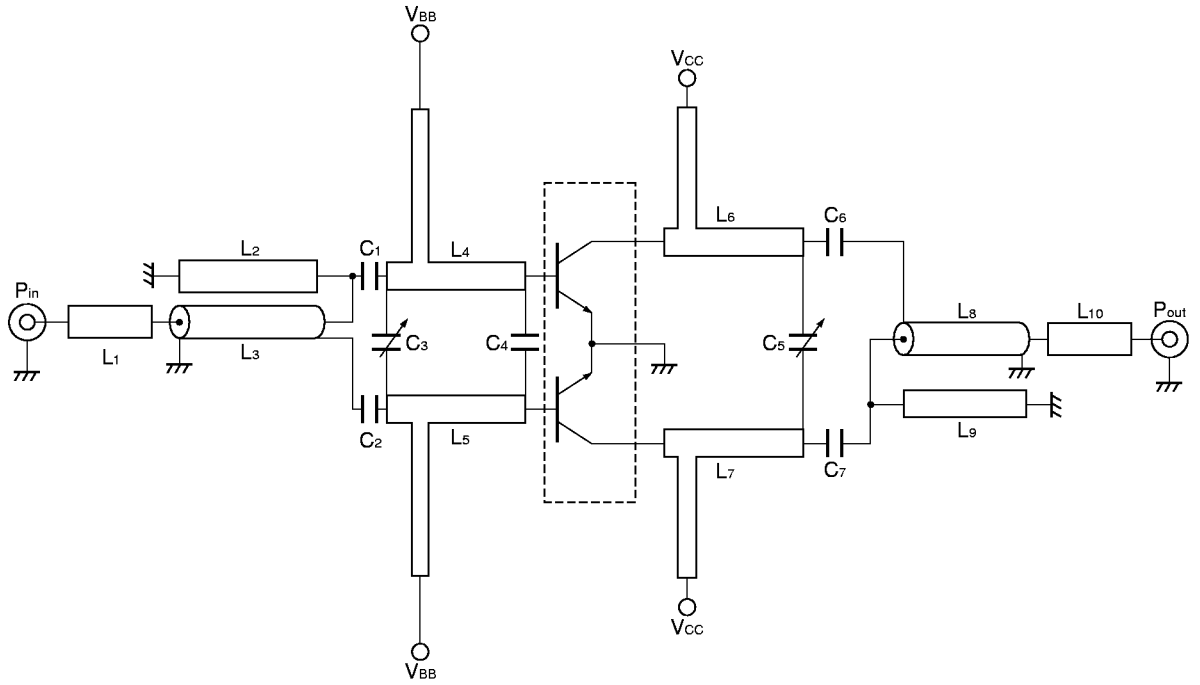
OUTPUT POWER AND COLLECTOR EFFICIENCY vs. INPUT POWER



OUTPUT POWER vs. INPUT POWER

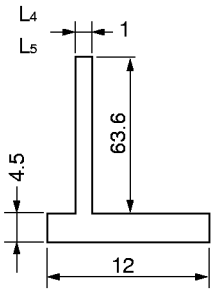


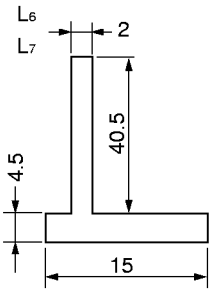
APPLICATION CIRCUIT EXAMPLE



$C_1 = C_2 = 20$ 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