

THERMAL RESISTANCE ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Thermal Resistance from Junction to Ambient ^{Note}	R_{thj-a}	65	$^\circ\text{C/W}$

Note Mounted on $34.2\text{ cm}^2 \times 0.8\text{ mm}$ (t) glass epoxy PWB

RECOMMENDED OPERATING RANGE ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Collector to Emitter Voltage	V_{CE}	—	6.0	7.2	V
Collector Current	I_C	—	400	500	mA
Input Power ^{Note}	P_{in}	—	15	20	dBm

Note Input power under conditions of $V_{CE} \leq 6.0\text{ V}$, $f = 460\text{ MHz}$

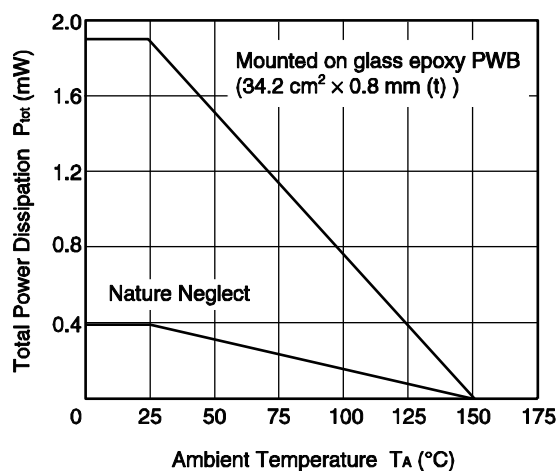
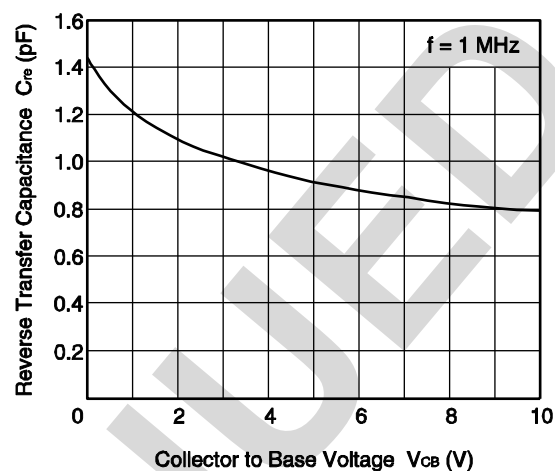
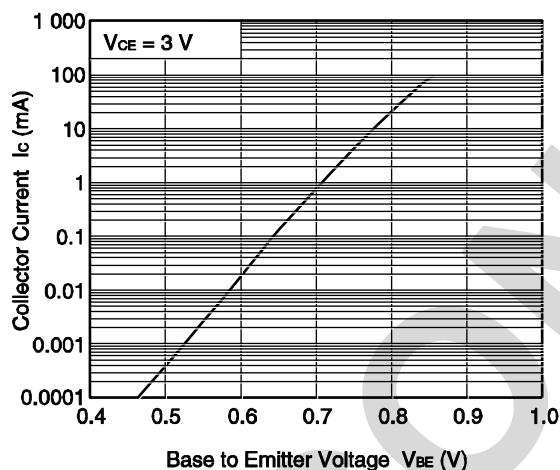
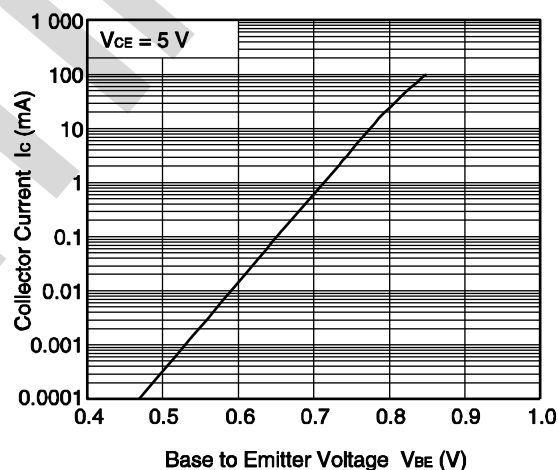
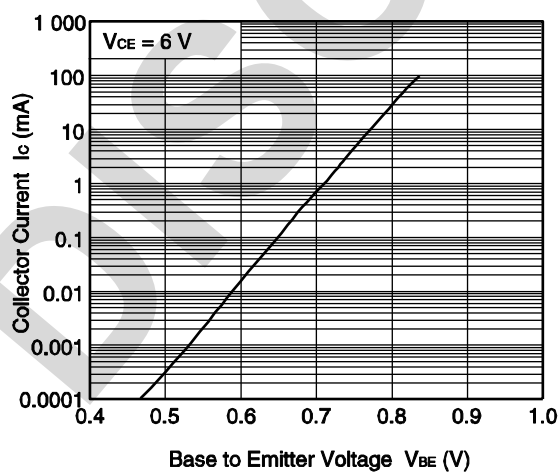
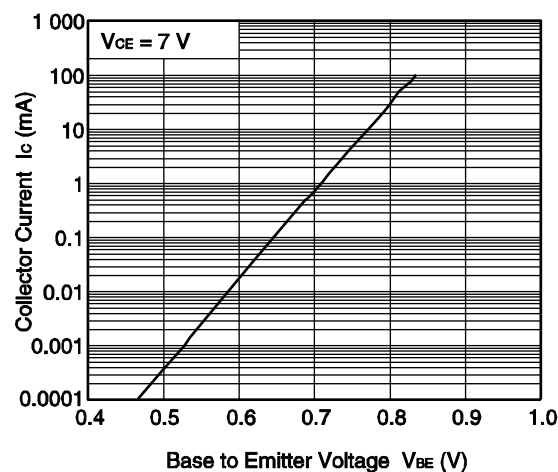
ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I_{CBO}	$V_{CB} = 9.2\text{ V}$, $I_E = 0\text{ mA}$	–	–	1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1.0\text{ V}$, $I_C = 0\text{ mA}$	–	–	1	μA
DC Current Gain	h_{FE} ^{Note}	$V_{CE} = 3\text{ V}$, $I_C = 100\text{ mA}$	80	120	180	–
RF Characteristics						
Linner Gain (1)	G_L	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 460\text{ MHz}$, $P_{in} = 0\text{ dBm}$	19	22	–	dB
Linner Gain (2)	G_L	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 900\text{ MHz}$, $P_{in} = 0\text{ dBm}$	–	19	–	dB
Output Power (1)	P_{out}	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 460\text{ MHz}$, $P_{in} = 15\text{ dBm}$	28.5	30.0	–	dBm
Output Power (2)	P_{out}	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 900\text{ MHz}$, $P_{in} = 20\text{ dBm}$	–	30.0	–	dBm
Collector Efficiency (1)	η_C	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 460\text{ MHz}$, $P_{in} = 15\text{ dBm}$	–	50	–	%
Collector Efficiency (2)	η_C	$V_{CE} = 6\text{ V}$, $I_{C(\text{set})} = 30\text{ mA}$ (RF OFF), $f = 900\text{ MHz}$, $P_{in} = 20\text{ dBm}$	–	60	–	%

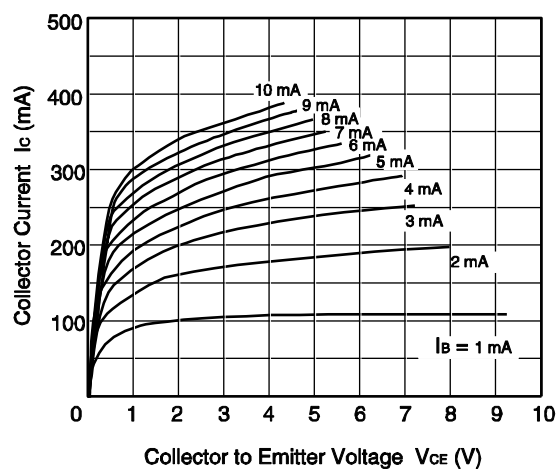
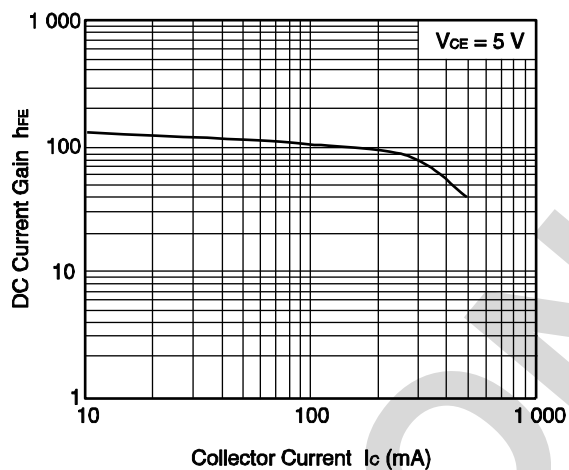
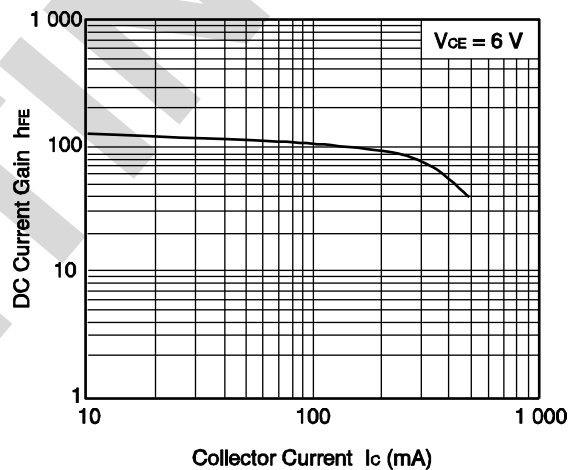
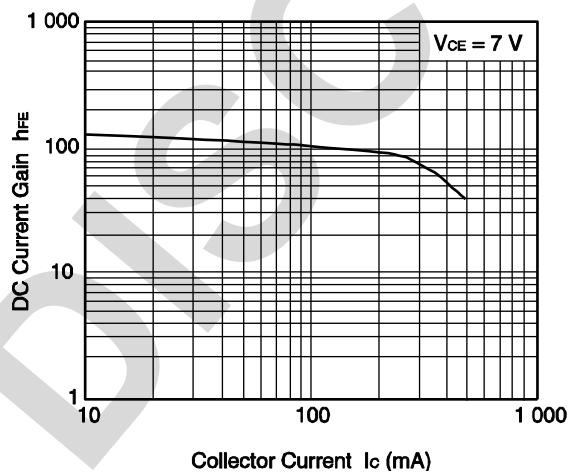
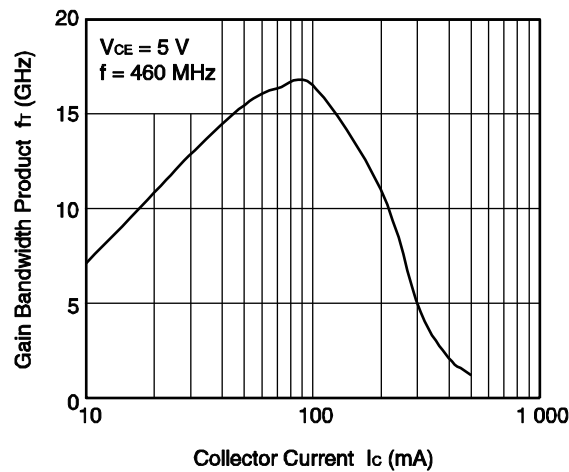
Note Pulse measurement: $PW \leq 350\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$

 h_{FE} CLASSIFICATION

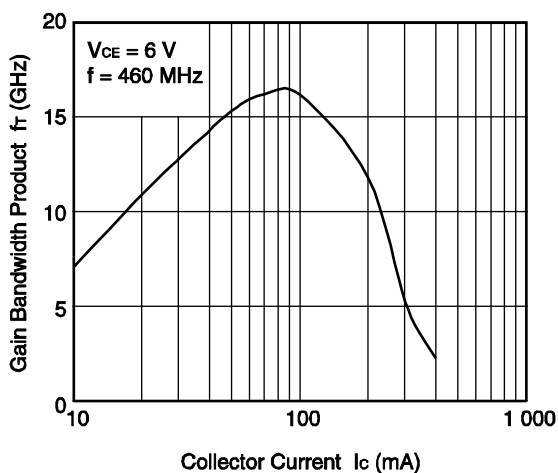
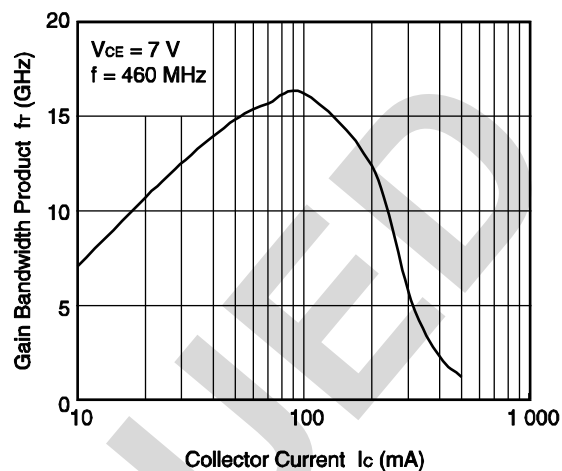
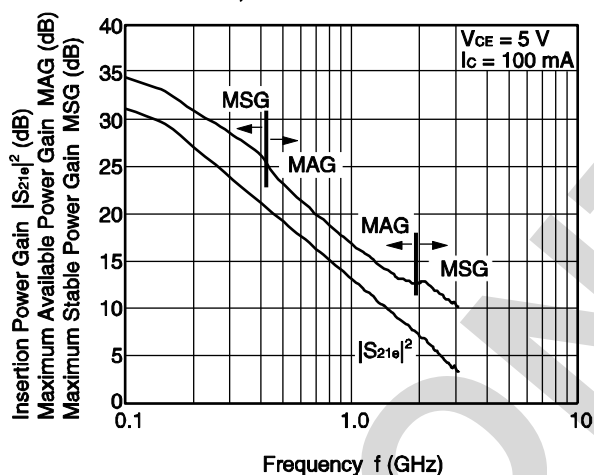
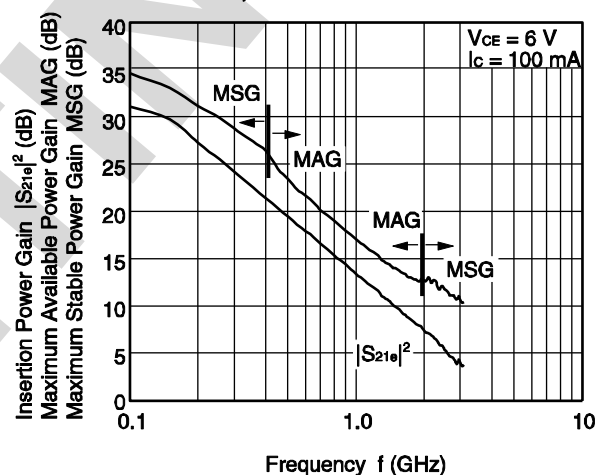
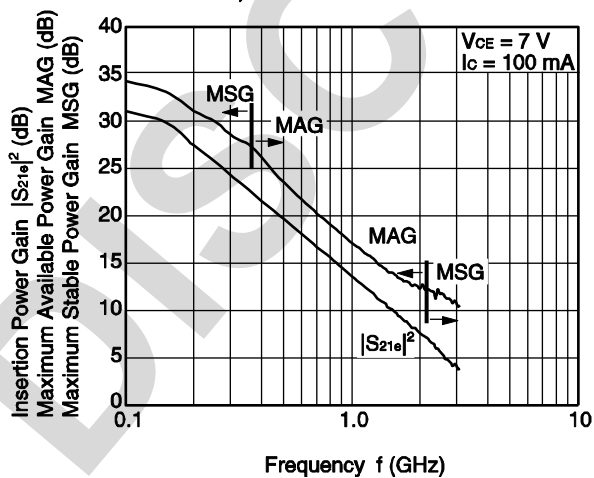
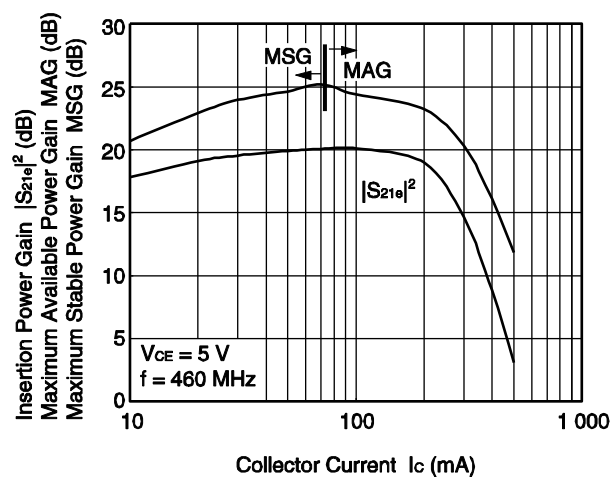
Rank	FB
Marking	SP
h_{FE} Value	80 to 180

■ TYPICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise specified)TOTAL POWER DISSIPATION
vs. AMBIENT TEMPERATUREREVERSE TRANSFER CAPACITANCE
vs. COLLECTOR TO BASE VOLTAGECOLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGECOLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGECOLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGECOLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE

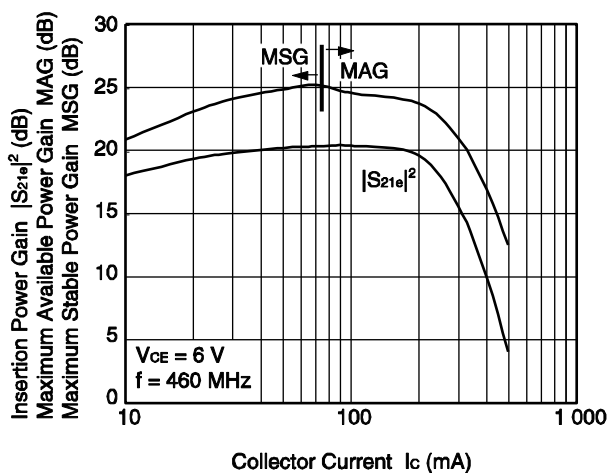
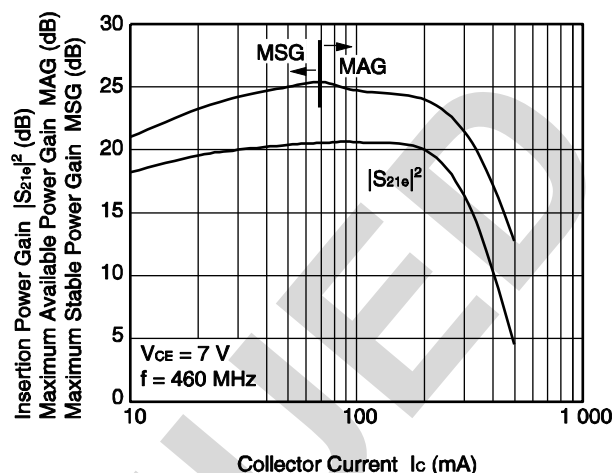
Remark The graphs indicate nominal characteristics.

COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGEDC CURRENT GAIN vs.
COLLECTOR CURRENTDC CURRENT GAIN vs.
COLLECTOR CURRENTDC CURRENT GAIN vs.
COLLECTOR CURRENTGAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT

Remark The graphs indicate nominal characteristics.

GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENTGAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENTINSERTION POWER GAIN,
MAG, MSG vs. FREQUENCYINSERTION POWER GAIN,
MAG, MSG vs. FREQUENCYINSERTION POWER GAIN,
MAG, MSG vs. FREQUENCYINSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT

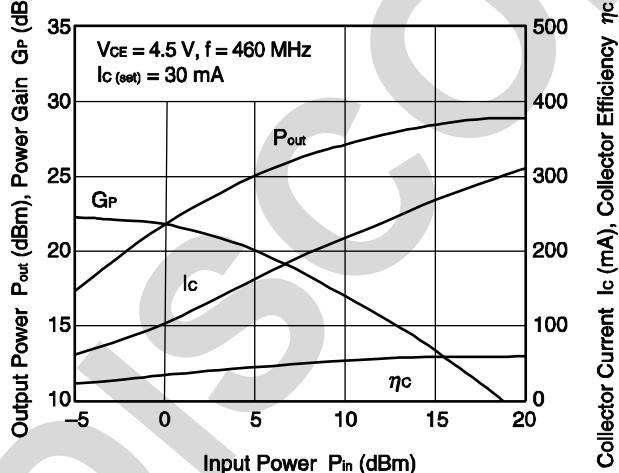
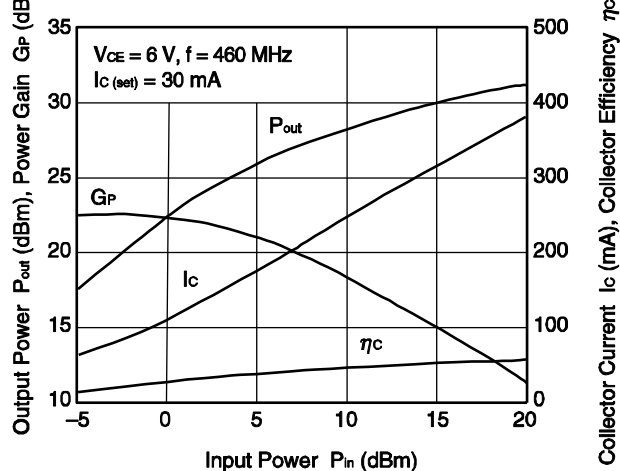
Remark The graphs indicate nominal characteristics.

INSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENTINSERTION POWER GAIN, MAG, MSG
vs. COLLECTOR CURRENT

S-PARAMETERS

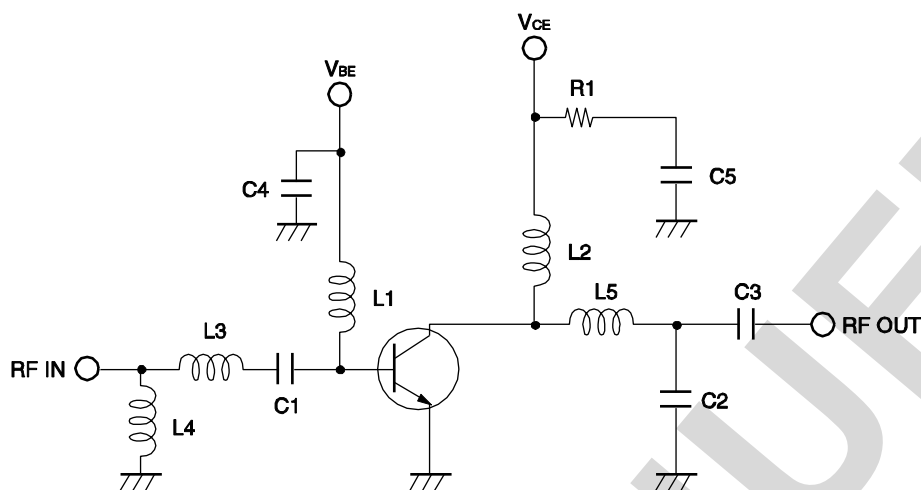
- S-parameters and noise parameters are provided on our Web site in a format (S2P) that enables the direct import of the parameters to microwave circuit simulators without the need for keyboard inputs.
- Click here to download S-parameters.
- [RF and Microwave] ® [Device Parameters]
- URL <http://www.necel.com/microwave/en/>

PA EVALUATION CIRCUIT TYPICAL CHARACTERISTICS

OUTPUT POWER, POWER GAIN,
COLLECTOR CURRENT, COLLECTOR
EFFICIENCY vs. INPUT POWEROUTPUT POWER, POWER GAIN,
COLLECTOR CURRENT, COLLECTOR
EFFICIENCY vs. INPUT POWER

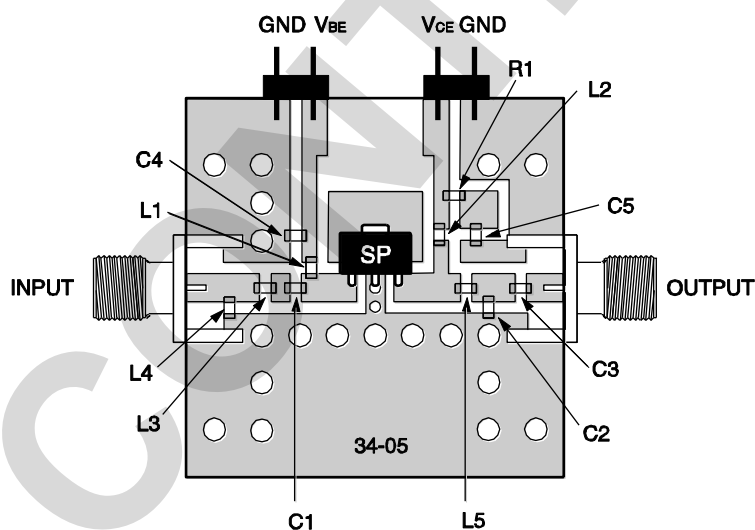
Remark The graphs indicate nominal characteristics.

■ EVALUATION CIRCUIT ($f = 460 \text{ MHz}$)



The application circuits and their parameters are for reference only and are not intended for use in actual design-ins.

■ EVALUATION BOARD ($f = 460 \text{ MHz}$)



Notes

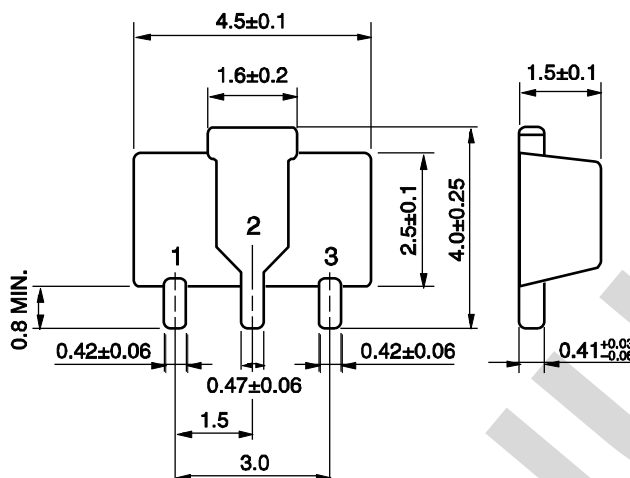
1. $20 \times 20 \text{ mm}$, $t = 0.8 \text{ mm}$ double sided copper clad glass epoxy PWB.
2. Back side: GND pattern
3. Solder gold plated on pattern
4. $\circ$: Through holes

 COMPONENT LIST

Component	Maker	Value	Size (TYPE)	Purpose
C1	Murata	10 pF	1005	Input DC Block/Input RF Matching
C2	Murata	4 pF	1005	Input RF Matching
C3	Murata	33 pF	1005	Input DC Block/Output RF Matching
C4	Murata	10 000 pF	1005	RF GND
C5	Murata	1 μ F	1608	RF GND
L1	Toko	68 nH	1005	RF Block/Input RF Matching
L2	Toko	33 nH	LLQ2021	RF Block/Output RF Matching
L3	Toko	1 nH	1005	Input RF Matching
L4	Toko	8.2 nH	1005	Input RF Matching
L5	Toko	8.2 nH	LLQ2021	Output RF Matching
R1	SSM	15 Ω	1608	Improve Stability

PACKAGE DIMENSIONS

3-PIN POWER MINIMOLD (34 PKG) (UNIT: mm)



PIN CONNECTIONS

1. Collector
2. Emitter
3. Base