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UHF linear power transistor

BLV59

FEATURES

- Internal input matching to achieve an optimum wideband capability and high power gain
- Emitter-ballasting resistors for lower junction temperatures
- Titanium-platinum-gold metallization ensures long life and excellent reliability.

APPLICATIONS

- UHF linear amplifiers in television transmitters.

DESCRIPTION

NPN silicon planar epitaxial power transistor encapsulated in a 6-lead SOT171A flange package with a ceramic cap. All leads are isolated from the flange.

PINNING - SOT171A

PIN	SYMBOL	DESCRIPTION
1	e	emitter
2	e	emitter
3	b	base
4	c	collector
5	e	emitter
6	e	emitter

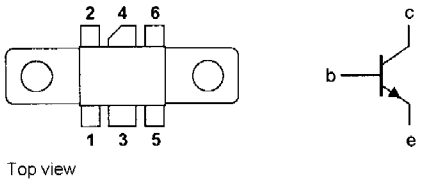


Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

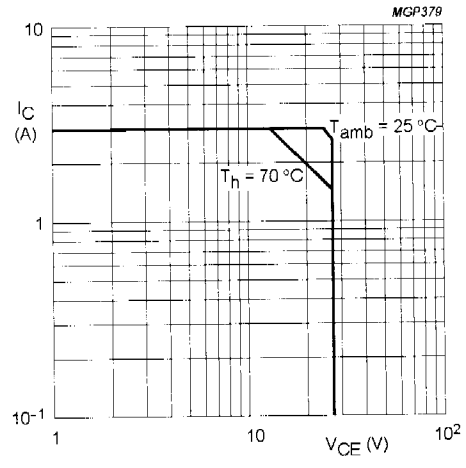
RF performance at T_h = 25 °C in a common emitter class-AB circuit.

MODE OF OPERATION	f (MHz)	V_{CE} (V)	P_L (W)	G_p (dB)	η_C (%)
CW, class-AB	860	25	30	>7	>50

LIMITING VALUES

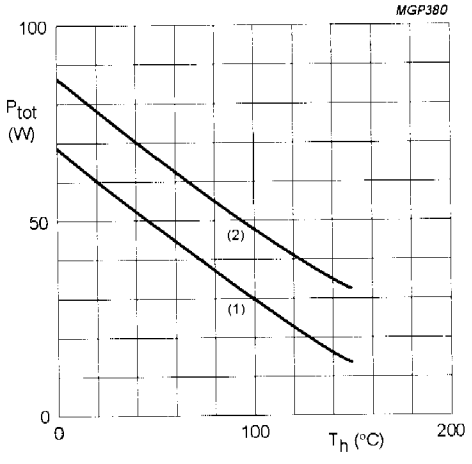
In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	50	V
V_{CEO}	collector-emitter voltage	open base	–	27	V
V_{EBO}	emitter-base voltage	open collector	–	3.5	V
I_C	collector current (DC)		–	3	A
$I_{C(AV)}$	average collector current		–	3	A
I_{CM}	peak collector current	f > 1 MHz	–	9	A
P_{tot}	total power dissipation	T_{mb} = 25 °C; f > 1 MHz	–	70	W
T_{stg}	storage temperature		−65	+150	°C
T_j	operating junction temperature		–	200	°C



$R_{th\ mb\text{-}h}$ = 0.4 K/W.

Fig.2 DC SOAR.



(1) Continuous operation (f > 1 MHz).
(2) Short-time operation during mismatch (f > 1 MHz).

Fig.3 Power/temperature derating curves.

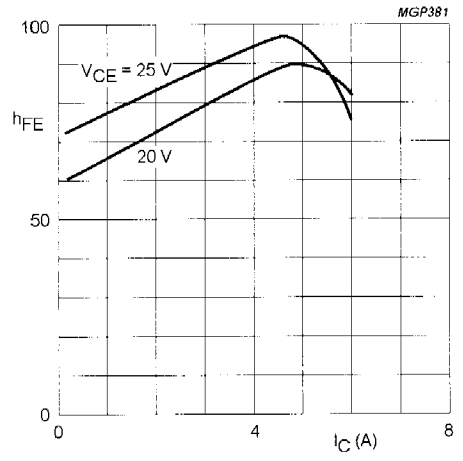
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}mb}$	thermal resistance from junction to mounting base	T_{mb} = 25 °C, P_{tot} = 50 W	2.3	K/W
$R_{th\ mb\text{-}h}$	thermal resistance from mounting base to heatsink		0.4	K/W

CHARACTERISTICS

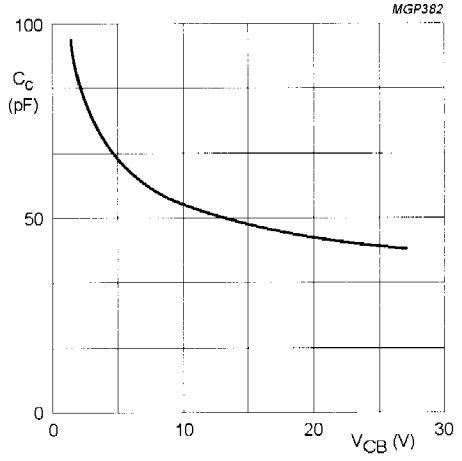
T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; I_C = 50 mA	50	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; I_C = 100 mA	27	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; I_E = 10 mA	3.5	–	–	V
I_{CES}	collector leakage current	V_{CE} = 27 V; V_{BE} = 0	–	–	10	mA
$E_{(SBR)}$	second breakdown energy	L = 25 mH; f = 50 Hz; R_{BE} = 10 Ω	4	–	–	mJ
h_{FE}	DC current gain	V_{CE} = 24 V; I_C = 2 A	15	–	–	
C_c	collector capacitance	V_{CB} = 25 V; I_E = i_e = 0; f = 1 MHz	–	44	–	pF
C_{re}	feedback capacitance	V_{CE} = 25 V; I_C = 0; f = 1 MHz	–	30	–	pF
C_{cf}	collector-flange capacitance		–	2	–	pF



T_j = 25 °C.

Fig.4 DC current gain as a function of collector current; typical values.

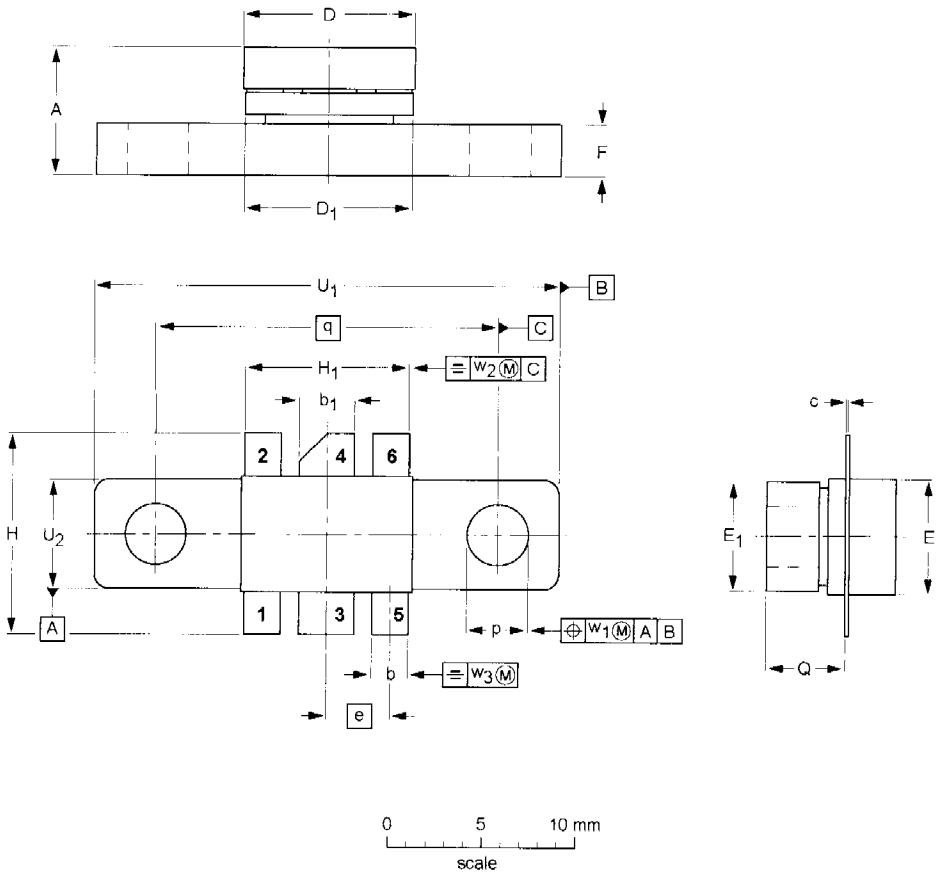


$I_E = i_e$ = 0, f = 1 MHz.

Fig.5 Collector capacitance as a function of collector-base voltage; typical values

PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 6 leads **SOT171A**



DIMENSIONS (millimetre dimensions are derived from the original inch dimensions)

UNIT	A	b	b_1	c	D	D_1	E	E_1	e	F	H	H_1	p	Q	q	U_1	U_2	w_1	w_2	w_3
mm	6.81 6.07	2.15 1.85	3.20 2.89	0.16 0.07	9.25 9.04	9.30 8.99	5.95 5.74	6.00 5.70	3.58	3.05 2.54	11.31 10.54	9.27 9.01	3.43 3.17	4.32 4.11	18.42	24.90 24.63	6.00 5.70	0.51	1.02	0.26
inches	0.268 0.239	0.085 0.073	0.126 0.114	0.006 0.003	0.364 0.356	0.366 0.354	0.234 0.226	0.236 0.224	0.140	0.120 0.100	0.445 0.415	0.365 0.355	0.135 0.125	0.170 0.162	0.725	0.980 0.970	0.236 0.224	0.02	0.04	0.01

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT171A					97-06-28