The RF Line

NPN Silicon RF Power Transistor

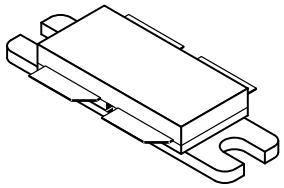
TPV6030

35 W, 470 – 860 MHz
NPN SILICON
RF POWER TRANSISTOR

The TPV6030 is designed for driver stages in band IV and V TV transmitter amplifiers. It incorporates high value emitter ballast resistors, gold metallizations and offers a high degree of reliability and ruggedness.

Including double input and output matching networks, the TPV6030 features high impedances. It can easily operate in a full 470 MHz to 860 MHz bandwidth in a single and simple circuit.

- To be used class A for TV band IV and V.
- Specified 25 Volts, 860 MHz Characteristics
  Output Power = 20 Watts @ –51 dB (3 tones)
  Output Power = 35 Watts @ 1 dB Comp. (CW)



CASE 375A–01, STYLE 1

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	28	Vdc
Collector–Base Voltage	V_{CBO}	55	Vdc
Emitter–Base Voltage	V_{EBO}	4	Vdc
Storage Temperature Range	T_{stg}	–65 to +150	°C
Operating Junction Temperature	T_J	200	°C
Total Device Dissipation @ T = 25°C Derate above 25°C	P_D	160 0.9	W W/°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (1)	$R_{\theta JC}$	1.1	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage (I_C = 35 mA, R_{be} = 75 Ω)	$V_{(BR)CER}$	40	—	—	Vdc
Collector–Emitter Breakdown Voltage (I_C = 10 mAdc)	$V_{(BR)EBO}$	4	—	—	Vdc
Collector–Base Breakdown Voltage (I_E = 35 mAdc)	$V_{(BR)CBO}$	55	—	—	Vdc
Collector–Emitter Leakage (V_{CE} = 30 V, R_{be} = 75 Ω)	I_{CER}	—	—	10	mA
ON CHARACTERISTICS					
DC Current Gain (I_C = 2 Adc, V_{CE} = 10 Vdc)	h_{FE}	15	—	100	—
DYNAMIC CHARACTERISTICS					
Output Capacitance (each side) (2) (V_{CB} = 28 V, I_E = 0, f = 1 MHz)	C_{ob}	—	45	—	pF

NOTES:

1. Thermal resistance is determined under specified RF operating condition.
2. Value of "C_{ob}" is that of die only. It is not measurable in TPV6030 because of internal matching network.

(continued)

ELECTRICAL CHARACTERISTICS — continued (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
FUNCTIONAL TESTS					
Common–Emitter Amplifier Power Gain (V_{CE} = 25 V, I_C = 4.5 A, f = 860 MHz)	G_p	9.5	10.5	—	dB
Intermodulation (–8 dB/–7 dB/–16 dB) (3) (V_{CE} = 25 V, P_{out} = 20 W ref, I_C = 4.5 A, f = 860 MHz)	IMD	—	–52	–51	dB
Output Power @ 1 dB Compression (V_{CE} = 25 V, I_C = 4.5 A, f = 860 MHz)	P_{out}	35	40	—	W

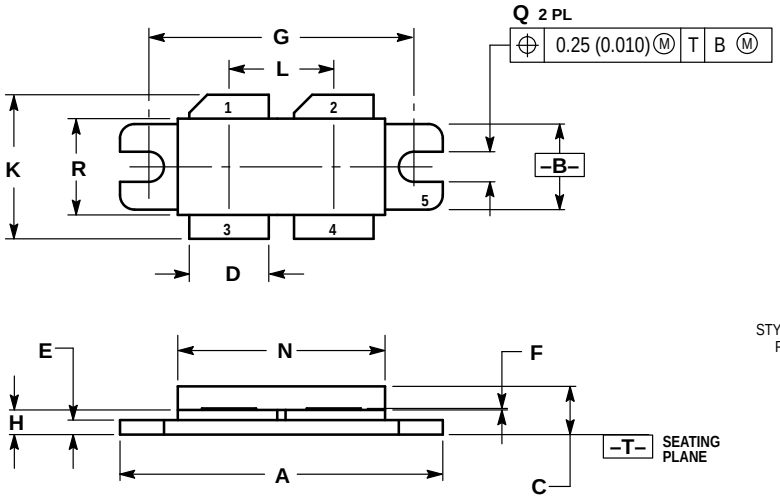
NOTE:
3. Vision Carrier, Sound Carrier and Sideband Signal respectively.

V_{CE} = 25 V, I_C = 4.5 A

f	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	$\|S_{11}\|$	∅	$\|S_{21}\|$	∅	$\|S_{12}\|$	∅	$\|S_{22}\|$	∅
460	.98	175	1.04	98	.012	50	.73	168
560	.97	172	1.17	83	.015	39	.66	170
660	.94	170	1.46	60	.020	23	.59	176
760	.88	168	1.77	35	.026	–4	.59	–168
860	.81	171	1.70	–7	.027	–42	.77	–163

Table 1. Common Emitter S–Parameters

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.330	1.350	33.79	34.29
B	0.375	0.395	9.52	10.03
C	0.180	0.205	4.57	5.21
D	0.320	0.340	8.13	8.64
E	0.060	0.070	1.52	1.77
F	0.004	0.006	0.11	0.15
G	1.100 BSC		27.94 BSC	
H	0.082	0.097	2.08	2.46
K	0.580	0.620	14.73	15.75
L	0.435 BSC		11.05 BSC	
N	0.845	0.875	21.46	22.23
Q	0.118	0.130	3.00	3.30
R	0.390	0.410	9.91	10.41

STYLE 1:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. BASE
5. EMITTER

CASE 375A–01
ISSUE O

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