

LAPT

Application : Audio and General Purpose

■ **Absolute maximum ratings** (Ta=25°C)

($T_a=25^{\circ}\text{C}$)

Symbol	Conditions	2SA1386	2SA1386A	Unit
I _{CBO}		-100max	-100max	μA
	V _{CB} =	-160	-180	V
I _{EBO}	V _{EB} =-5V	-100max		μA
V _{(BR)CEO}	I _C =-25mA	-160min	-180min	V
h _{FE}	V _{CE} =-4V, I _C =-5A	50min*		
V _{CE(sat)}	I _C =-5A, I _B =-0.5A	-2.0max		V
f _T	V _{CE} =-12V, I _E =2A	40typ		MHz
C _{OB}	V _{CB} =-10V, f=1MHz	500typ		pF

■ Typical Switching Characteristics (Common Emitter)

The graph shows the relationship between Collector Current I_C (A) and Base-Emitter Voltage V_{BE} (V) for a BJT at $V_{CE} = -4V$. The curves are plotted for three different temperatures: 125°C (Case Temp), 25°C (Case Temp), and -30°C (Case Temp). The curves show that I_C increases with V_{BE} and is higher at higher temperatures.

Graph of DC Current Gain h_{FE} vs Collector Current I_C (A) for 2N3866 at $V_{CE} = -4V$. The y-axis is logarithmic, ranging from 10 to 300. The x-axis is logarithmic, ranging from 0.02 to 15 A. Three curves are shown, with the middle one labeled 'Typ'. The gain is highest at low and medium currents and decreases at high currents.

Graph showing DC Current Gain (h_{FE}) versus Collector Current (I_C) for the 2N4350 JFET at $V_{CE} = -4V$. The curves are plotted for three temperatures: $125^{\circ}C$, $25^{\circ}C$, and $-30^{\circ}C$. The y-axis is logarithmic, ranging from 20 to 200. The x-axis is logarithmic, ranging from -0.02 to -15 A. The curves show that h_{FE} is highest at $125^{\circ}C$ and lowest at $-30^{\circ}C$, and it decreases significantly at high collector currents.

A log-log plot showing the transient thermal resistance $\theta_{JA}(t)$ in $^{\circ}\text{C/W}$ as a function of time t in milliseconds. The y-axis ranges from 0.1 to 3, and the x-axis ranges from 1 to 2000 ms. The curve starts at approximately 0.2 $^{\circ}\text{C/W}$ at 1 ms and increases to about 2.5 $^{\circ}\text{C/W}$ at 2000 ms.

Time t (ms)	Transient Thermal Resistance $\theta_{JA}(t)$ ($^{\circ}\text{C/W}$)
1	0.2
10	0.35
100	0.6
1000	1.5
2000	2.5

The graph shows the relationship between the cut-off frequency f_T and the emitter current I_E for the 2N4350 JFET. The x-axis is logarithmic, ranging from 0.02 A to 10 A. The y-axis is linear, ranging from 0 to 60 MHz. Three curves are plotted, with the middle one labeled 'Typ'. All curves show a peak in f_T around $I_E = 2$ A.

Emitter Current I_E (A)	f_T (MHz) - Top Curve	f_T (MHz) - Typ Curve	f_T (MHz) - Bottom Curve
0.02	10	8	6
0.1	25	20	15
1	50	38	28
2	52	42	32
10	45	38	30

Without Heatsink
Natural Cooling

1.2SA1386
2.2SA1386A

Collector Current I_c (A)

Collector-Emitter Voltage V_{ce} (V)

10ms

DC

1 2

The graph illustrates the relationship between ambient temperature and maximum power dissipation for a power MOSFET. The y-axis represents Maximum Power Dissipation P_c in Watts (W), ranging from 3.5 to 130. The x-axis represents Ambient Temperature T_a in degrees Celsius ($^{\circ}\text{C}$), ranging from 0 to 150. Two curves are shown: one for a device without a heatsink, which remains nearly constant at approximately 3.5 W, and another for a device with an infinite heatsink, which decreases linearly from 130 W at 25 $^{\circ}\text{C}$ to 3.5 W at 150 $^{\circ}\text{C}$.

Ambient Temperature T_a ($^{\circ}\text{C}$)	Maximum Power Dissipation P_c (W) Without Heatsink	Maximum Power Dissipation P_c (W) With infinite heatsink
25	~3.5	130
50	~3.5	105
75	~3.5	80
100	~3.5	55
125	~3.5	30
150	~3.5	3.5