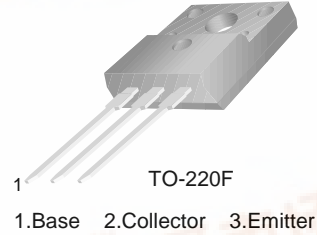


FAIRCHILD
SEMICONDUCTOR™

KSD1589

Low Frequency Power Amplifier

- Low Speed Switching Industrial Use
- Complement to KSB1098



NPN Silicon Darlington Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	150	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	5	A
I_{CP}	*Collector Current (Pulse)	8	A
I_B	Base Current	0.5	A
P_C	Collector Dissipation ($T_a=25^\circ\text{C}$)	1.5	W
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	20	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

* $PW \leq 10\text{ms}$, Duty Cycles $\leq 50\%$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
I_{CBO}	Collector Cut-off Current	$V_{CB} = 100\text{V}$, $I_E = 0$			1	μA
h_{FE1} h_{FE2}	*DC Current Gain	$V_{CE} = 2\text{V}$, $I_C = 3\text{A}$ $V_{CE} = 2\text{V}$, $I_C = 5\text{A}$	2K 500	6K	15K	
$V_{CE(sat)}$	*Collector-Emitter Saturation Voltage	$I_C = 3\text{A}$, $I_B = 3\text{mA}$		0.9	1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 3\text{A}$, $I_B = 3\text{mA}$		1.6	2	V
t_{ON}	Turn ON Time	$V_{CC} = 50\text{V}$, $I_C = 3\text{A}$ $I_{B1} = -I_{B2} = 3\text{mA}$ $R_L = 16.7\Omega$		1		μs
t_{stg}	Storage Time			3.5		μs
t_f	Fall Time			1.2		μs

* Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycles $\leq 2\%$ Pulsed

h_{FE} Classification

Classification	R	O	Y
h_{FE1}	2000 ~ 5000	3000 ~ 7000	5000 ~ 15000



Typical Characteristics

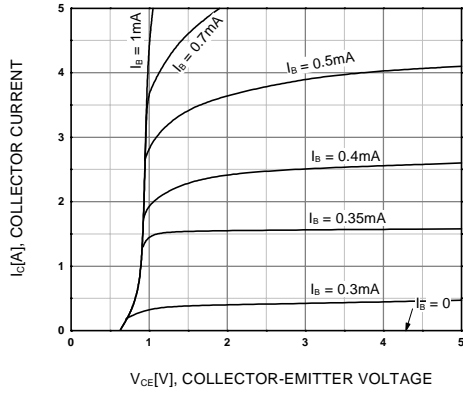


Figure 1. Static Characteristic

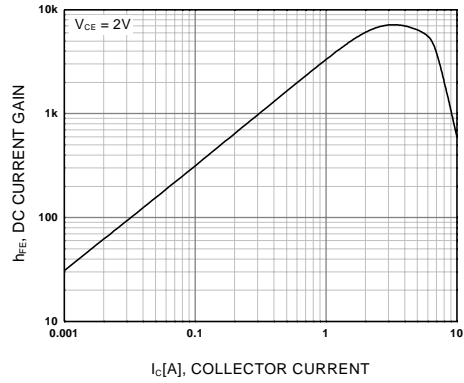


Figure 2. DC current Gain

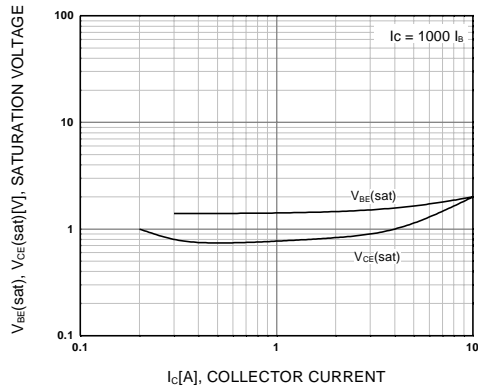


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

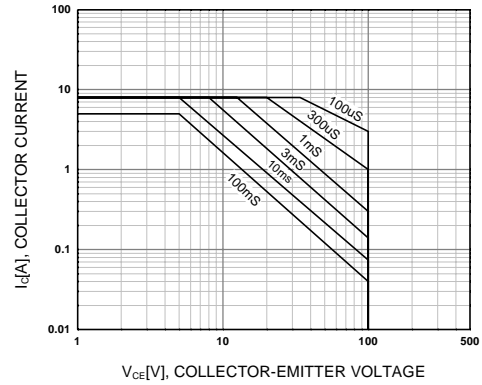


Figure 4. Safe Operating Area

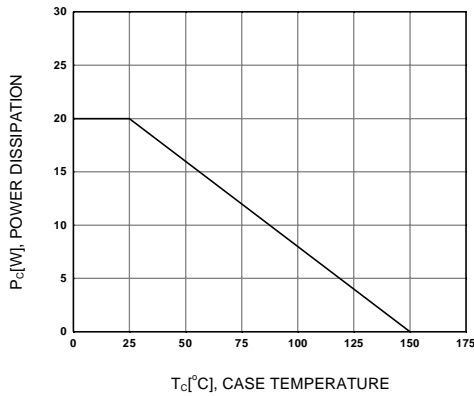
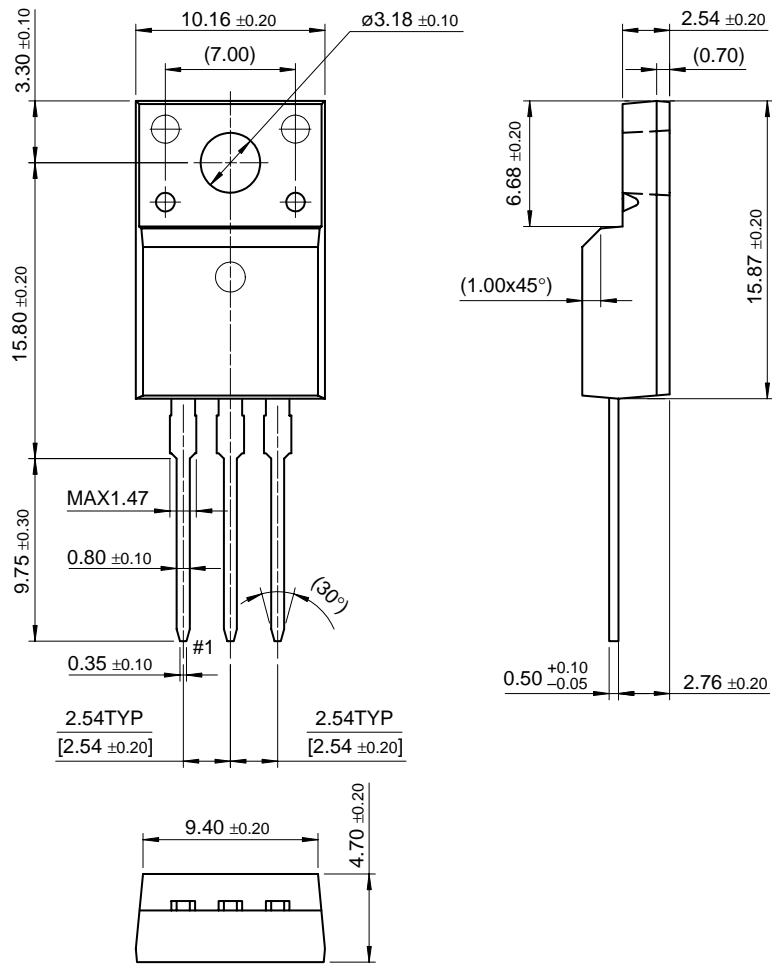


Figure 5. Power Derating

Package Dimensions

KSD1589

TO-220F



Dimensions in Millimeters

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E ² CMOS™	PowerTrench®	VCX™
FACT™	QFET™	
FACT Quiet Series™	QST™	
FAST®	Quiet Series™	
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