

Silicon NPN Power Transistors

2SC4160

DESCRIPTION

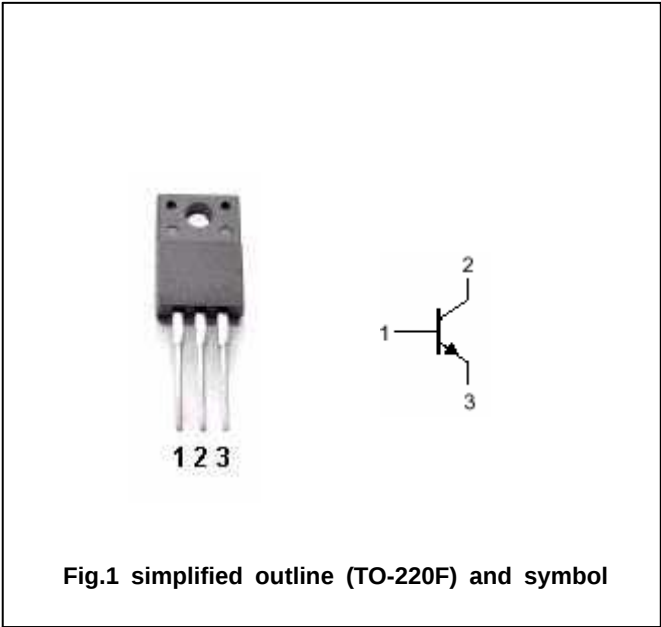
- With TO-220F package
- High breakdown voltage.
- High reliability.
- Fast switching speed
- Wide area of safe operation

APPLICATIONS

- 400V/4A switching regulator applications

PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter



Absolute maximum ratings (Ta=25)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V _{CBO}	Collector-base voltage	Open emitter	500	V
V _{CEO}	Collector-emitter voltage	Open base	400	V
V _{EBO}	Emitter-base voltage	Open collector	7	V
I _C	Collector current		4	A
I _{CM}	Collector current-peak		8	A
I _B	Base current		1.5	A
P _C	Collector dissipation	T _C =25	25	W
			2	
T _j	Junction temperature		150	
T _{stg}	Storage temperature		-55~150	

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CHARACTERISTICS

Tj=25 unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=5mA$; $R_{BE}=\infty$	400			V
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=1mA$; $I_E=0$	500			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=1mA$; $I_C=0$	7			V
V_{CEsat}	Collector-emitter saturation voltage	$I_C=2A$; $I_B=0.4A$			0.8	V
V_{BEsat}	Base-emitter saturation voltage	$I_C=2A$; $I_B=0.4A$			1.5	V
I_{CBO}	Collector cut-off current	$V_{CB}=400V$; $I_E=0$			10	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=5V$; $I_C=0$			10	μA
h_{FE-1}	DC current gain	$I_C=0.4A$; $V_{CE}=5V$	15		50	
h_{FE-2}	DC current gain	$I_C=2A$; $V_{CE}=5V$	10			
h_{FE-3}	DC current gain	$I_C=10mA$; $V_{CE}=5V$	10			
C_{OB}	Output capacitance	$I_E=0$; $V_{CB}=10V$; $f=1MHz$		50		pF
f_T	Transition frequency	$I_C=0.4A$; $V_{CE}=10V$		20		MHz

Switching times

t_{on}	Turn-on time	$I_C=3A$; $I_{B1}=0.6A$ $I_{B2}=-1.2A$ $V_{CC}=200V$, $R_L=66.6\Omega$			0.5	μs
t_s	Storage time				2.5	μs
t_f	Fall time				0.3	μs

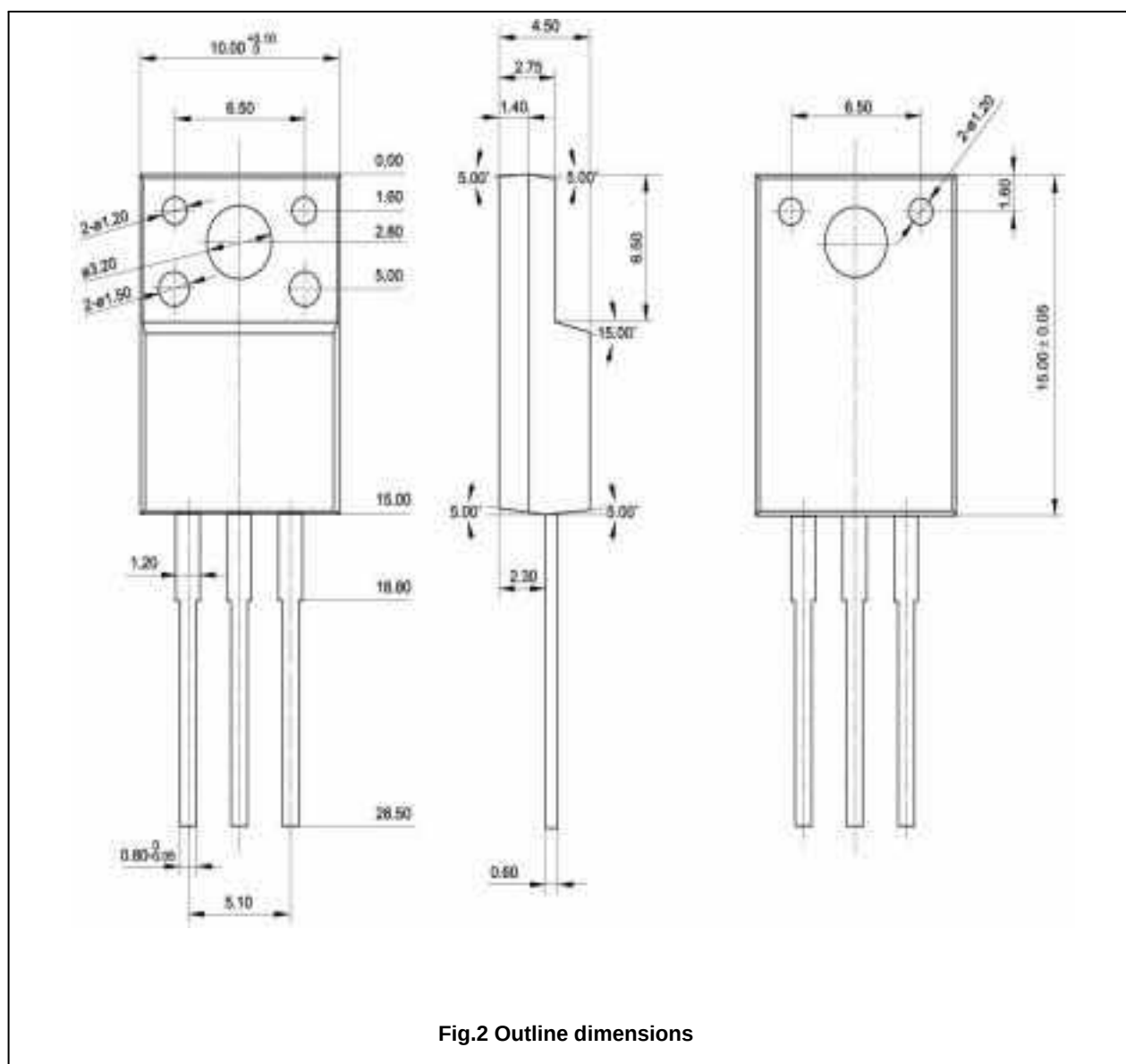
◆ h_{FE-1} Classifications

L	M	N
15-30	20-40	30-50

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PACKAGE OUTLINE



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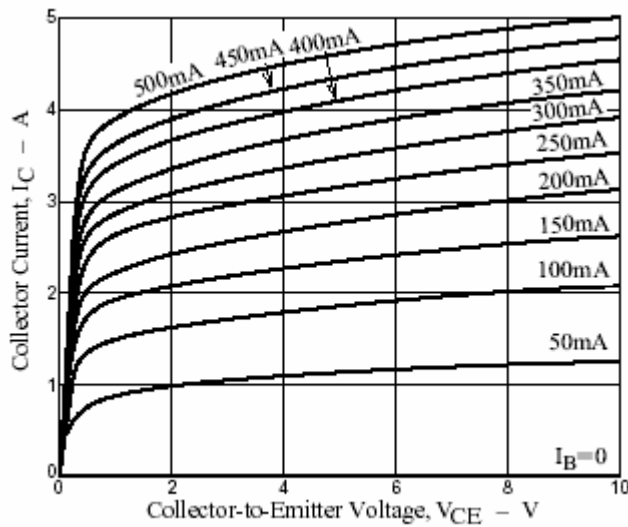


Fig.3 Static Characteristic

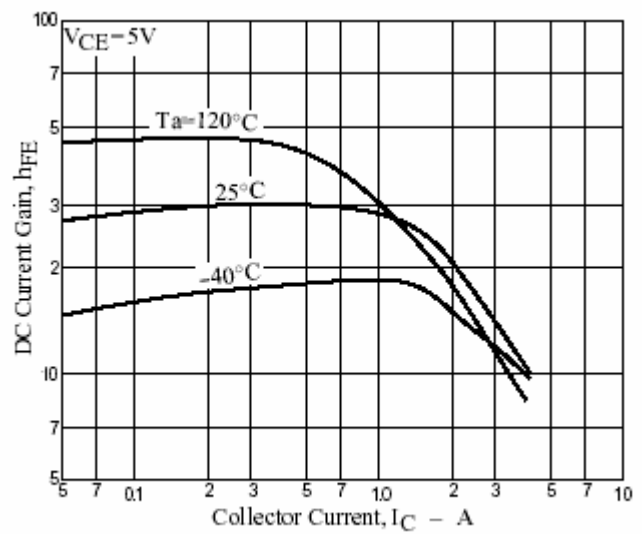


Fig.4 DC current Gain

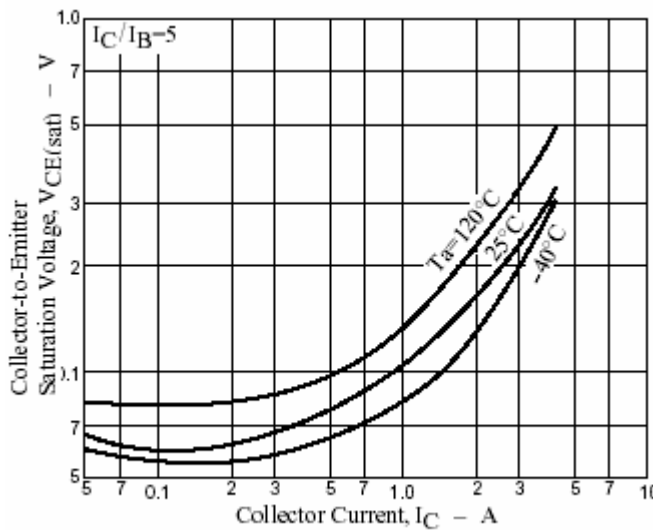


Fig.5 Collector-Emitter Saturation Voltage

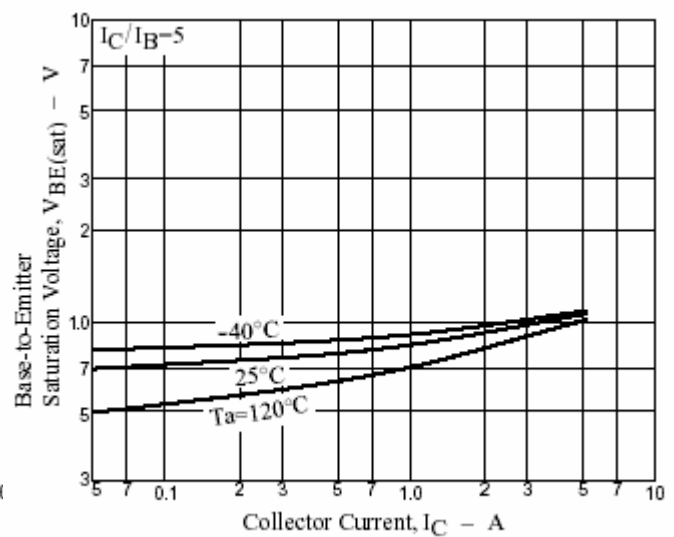


Fig.6 Base-Emitter Saturation Voltage

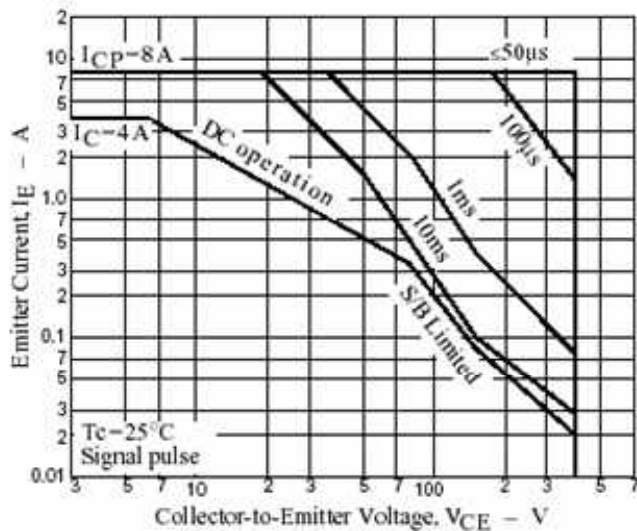


Fig.7 Safe Operating Area