

isc Silicon NPN Power Transistor

2SC3691

DESCRIPTION

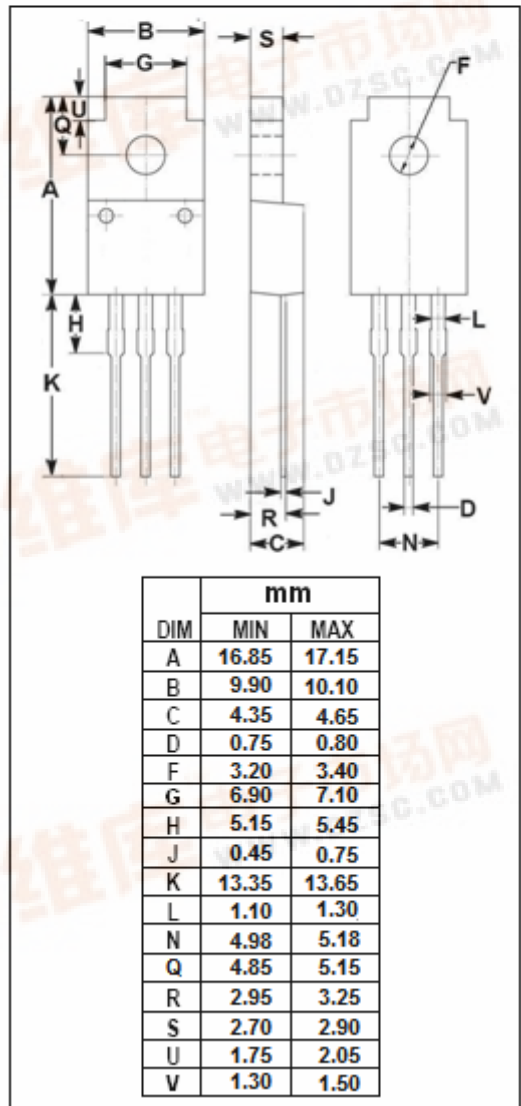
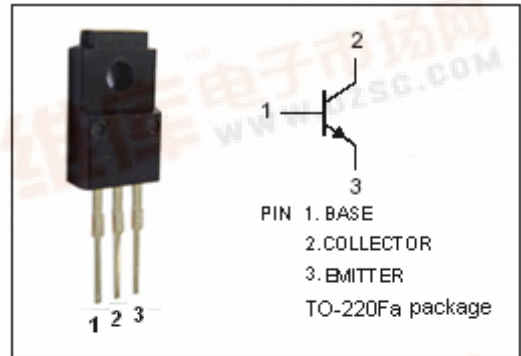
- Low Collector Saturation Voltage  
:  $V_{CE(sat)} = 0.5V(\text{Max}) @ I_C = 4A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 60V (\text{Min})$
- High Switching Speed

APPLICATIONS

- Designed for high speed and power switching applications

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	100	V
$V_{CEO}$	Collector-Emitter Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current-Continuous	5	A
$I_{CM}$	Collector Current-Peak	10	A
$I_B$	Base Current-Continuous	2.5	A
$P_C$	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	25	W
	Collector Power Dissipation @ $T_a=25^\circ\text{C}$	2	
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55~150	$^\circ\text{C}$



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## ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CE(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=3\text{A}; I_B=0.3\text{A}, L=1\text{mH}$	60			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=0.15\text{A}$			0.3	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=0.2\text{A}$			0.5	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C=3\text{A}; I_B=0.15\text{A}$			1.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C=4\text{A}; I_B=0.2\text{A}$			1.5	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=60\text{V}; I_E=0$			10	$\mu\text{A}$
$I_{CEX}$	Collector Cutoff Current	$V_{CE}=60\text{V}; V_{BE}=-1.5\text{V}$ $T_a=125^{\circ}\text{C}$			10 1.0	$\mu\text{A}$ mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			10	$\mu\text{A}$
$h_{FE-1}$	DC Current Gain	$I_C=0.5\text{A}; V_{CE}=2\text{V}$	100			
$h_{FE-2}$	DC Current Gain	$I_C=1\text{A}; V_{CE}=2\text{V}$	100	200	400	
$h_{FE-3}$	DC Current Gain	$I_C=3\text{A}; V_{CE}=2\text{V}$	60			
$f_T$	Current-Gain—Bandwidth Product	$I_C=0.5\text{A}; V_{CE}=10\text{V}$		150		MHz
$C_{OB}$	Output Capacitance	$I_E=0; V_{CB}=10\text{V}; f_{\text{test}}=1.0\text{MHz}$		70		pF

## Switching times

$t_{on}$	Turn-on Time	$I_C=3\text{A}; I_{B1}=-I_{B2}=0.15\text{A}$ $R_L=17\Omega; V_{CC}\approx 50\text{V}$			0.3	$\mu\text{s}$
$t_{stg}$	Storage Time				1.5	$\mu\text{s}$
$t_f$	Fall Time				0.3	$\mu\text{s}$

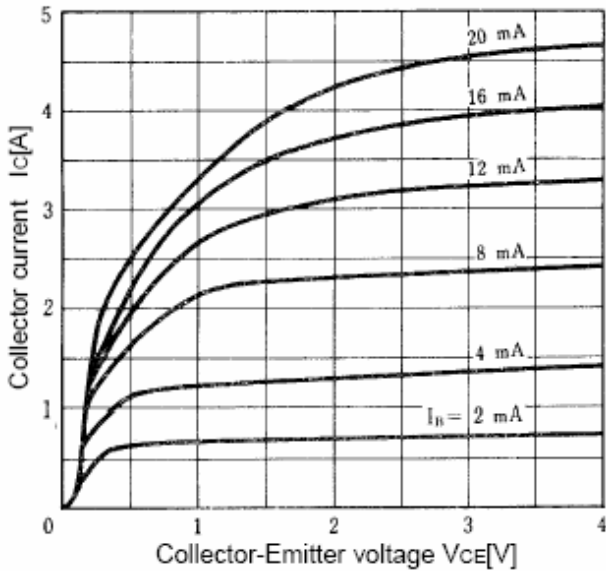
◆  $h_{FE-2}$  classifications

M	L	K
100-200	150-300	200-400

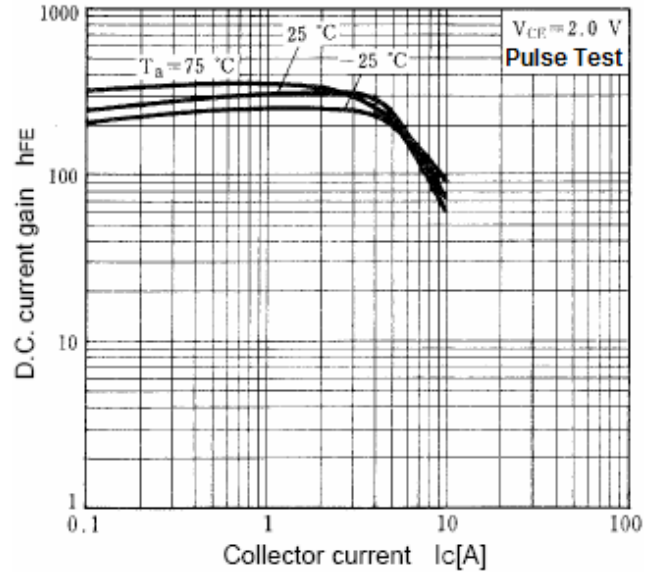
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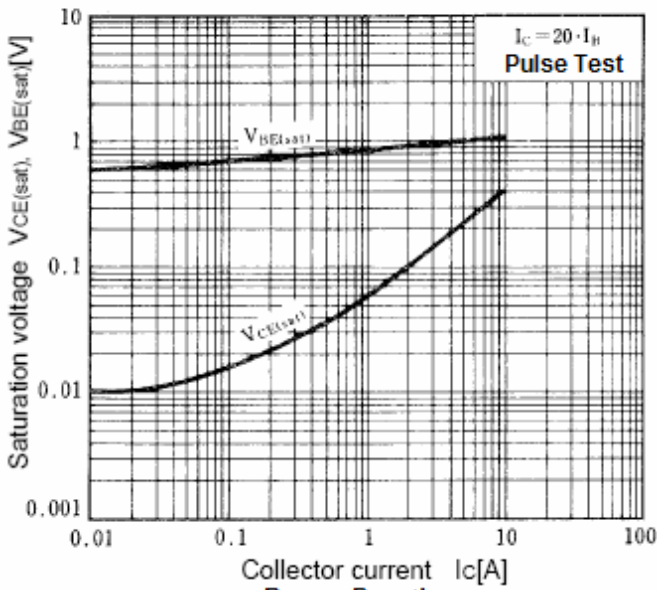
**$I_c$ - $V_{CE}$  Characteristics**



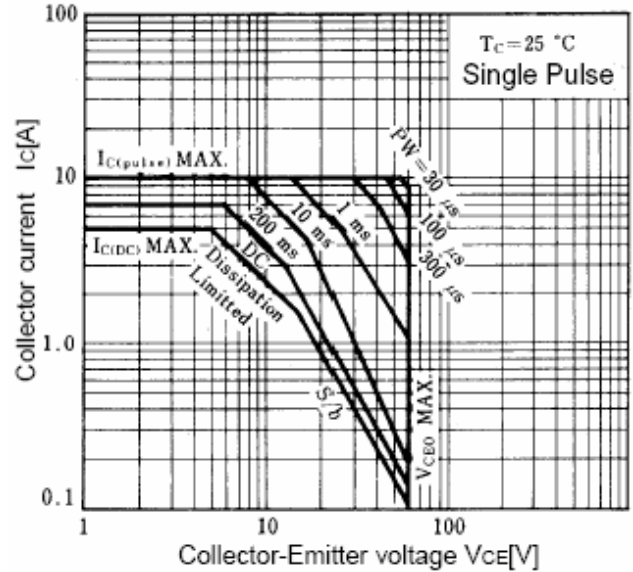
**$h_{FE}$ - $I_c$  Characteristics**



**$V_{CE(sat)}$ - $I_c$  &  $V_{BE(sat)}$ - $I_c$  Characteristics**



**Safe Operating Area**



**Power Derating**

