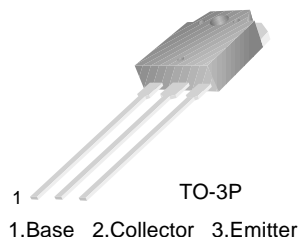


# KSC2751

KSC2751

**High Speed**  
**High Current Switching Industrial Use**



## NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	500	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current (DC)	15	A
$I_{CP}$	*Collector Current (Pulse)	30	A
$I_B$	Base Current (DC)	7.5	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	120	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

\*  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 10\%$

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{A}$ , $I_{B1} = 2\text{A}$ , $L = 50\mu\text{H}$	400			V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{A}$ , $I_{B1} = -I_{B2} = 2\text{A}$ $T_C = 125^\circ\text{C}$ , $L = 180\mu\text{H}$ , Clamped	450			V
$V_{CEX(sus)2}$	Collector-Emitter Sustaining Voltage	$I_C = 20\text{A}$ , $I_{B1} = 4\text{A}$ , $-I_{B2} = 2\text{A}$ $T_C = 125^\circ\text{C}$ , $L = 180\mu\text{H}$ , Clamped	400			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 400\text{V}$ , $I_E = 0$			100	$\mu\text{A}$
$I_{CER}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $R_{BE} = 50\Omega$ @ $T_C = 125^\circ\text{C}$			2	mA
$I_{CEX1}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $V_{BE(off)} = -1.5\text{V}$			100	$\mu\text{A}$
$I_{CEX2}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $V_{BE(off)} = -1.5\text{V}$ @ $T_C = 125^\circ\text{C}$			1	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}$ , $I_C = 0$			10	$\mu\text{A}$
$h_{FE1}$	* DC Current Gain	$V_{CE} = 5\text{V}$ , $I_C = 2\text{A}$	15	35	80	
$h_{FE2}$		$V_{CE} = 5\text{V}$ , $I_C = 5\text{A}$	10			
$h_{FE3}$		$V_{CE} = 5\text{V}$ , $I_C = 10\text{A}$	7			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 10\text{A}$ , $I_B = 2\text{A}$		0.3	1	V
$V_{BE(sat)}$	* Base Emitter ON Voltage	$I_C = 10\text{A}$ , $I_B = 2\text{A}$		1	1.5	V
$t_{ON}$	Turn ON Time	$V_{CC} = 150\text{V}$ , $I_C = 10\text{A}$ $I_{B1} = -I_{B2} = 2\text{A}$ $R_L = 15\Omega$			1	$\mu\text{s}$
$t_{STG}$	Storage Time				2.5	$\mu\text{s}$
$t_F$	Fall Time				0.7	$\mu\text{s}$

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

### $h_{FE}$ Classification

Classification	N	R	O	Y
$h_{FE1}$	15 ~ 30	20 ~ 40	30 ~ 60	40 ~ 80

# Typical Characteristics

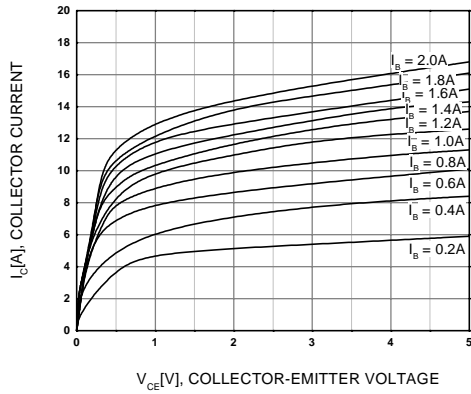


Figure 1. Static Characteristic

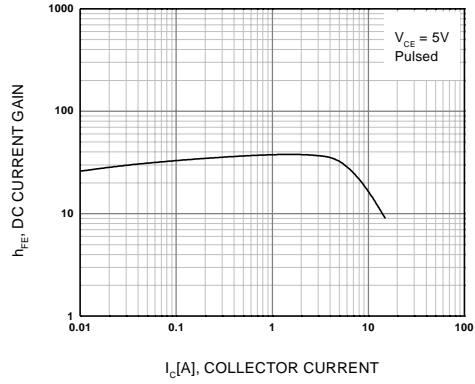


Figure 2. DC current Gain

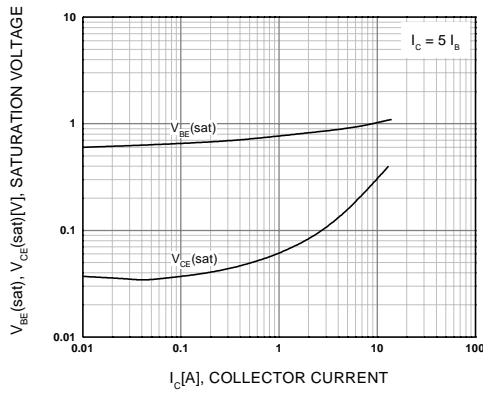


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

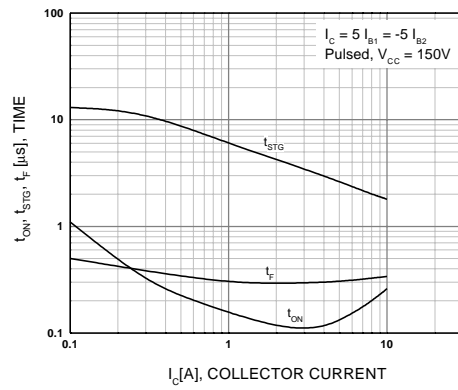


Figure 4. Switching Time

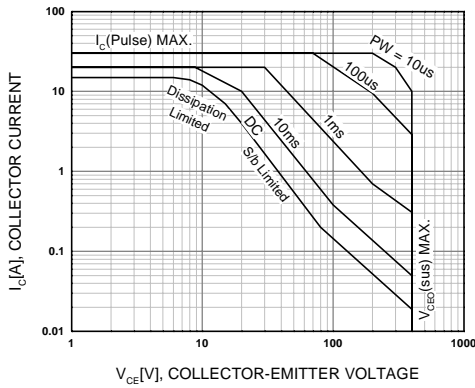


Figure 5. Safe Operating Area

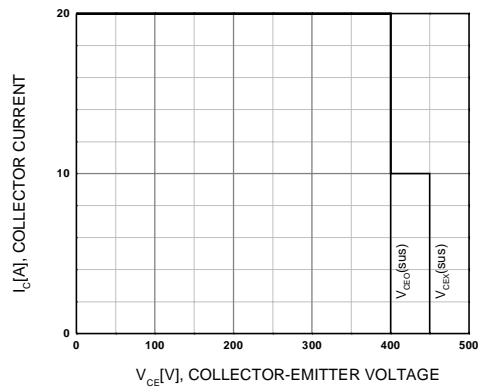


Figure 6. Reverse Bias Safe Operating Area

Typical Characteristics (Continued)

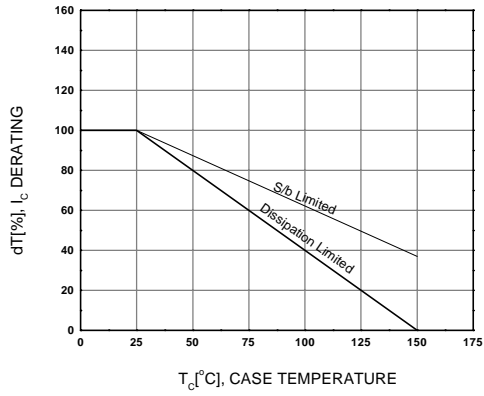


Figure 7. Derating Curve of Safe Operating Area

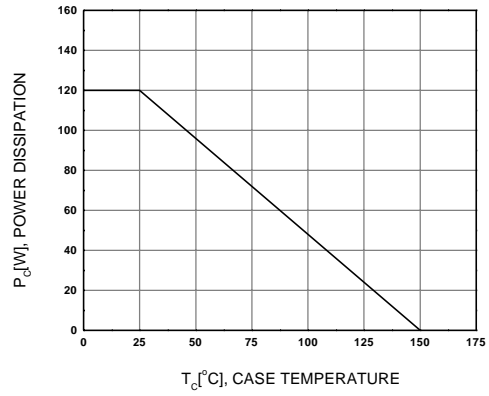
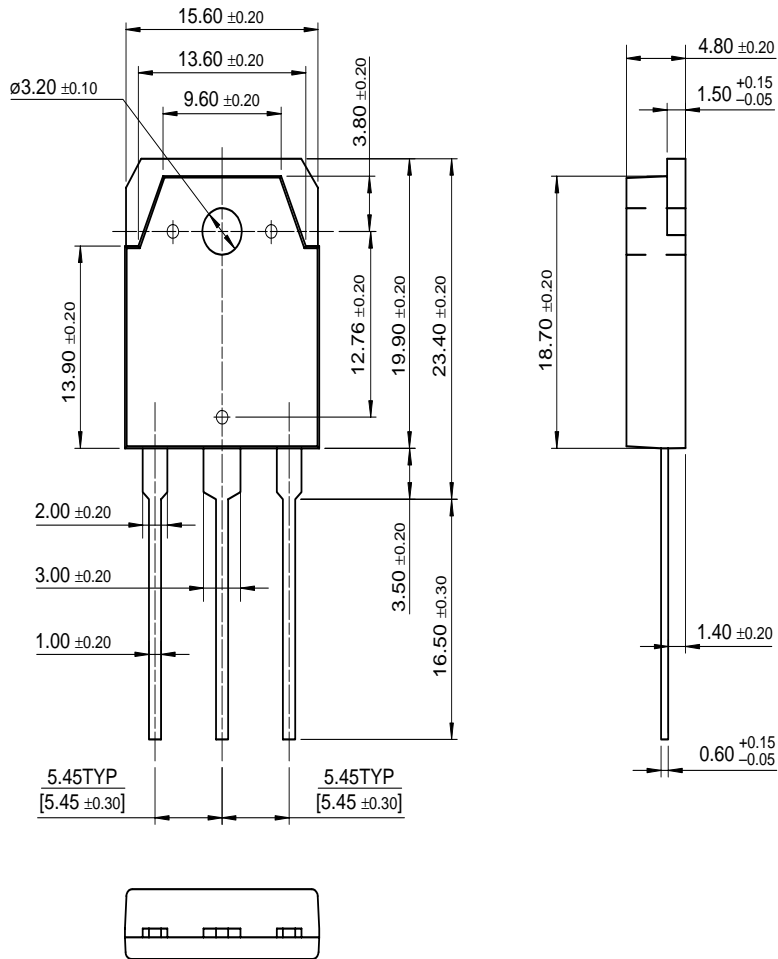


Figure 8. Power Derating

# Package Dimensions

KSC2751

## TO-3P



Dimensions in Millimeters

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CROSSVOLT™	POP™	UHC™
E <sup>2</sup> CMOS™	PowerTrench®	VCX™
FACT™	QFET™	
FACT Quiet Series™	QS™	
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