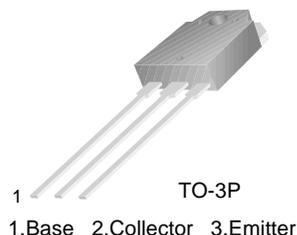


# KSC2751

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
$V_{CEO}(\text{sus})$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{A}, I_{B1} = 2\text{A}, L = 50\mu\text{H}$	400			V
$V_{CEX}(\text{sus})1$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{A}, I_{B1} = -I_{B2} = 2\text{A}$ $T_C = 125^\circ\text{C}, L = 180\mu\text{H}, \text{Clamped}$	450			V
$V_{CEX}(\text{sus})2$	Collector-Emitter Sustaining Voltage	$I_C = 20\text{A}, I_{B1} = 4\text{A}, -I_{B2} = 2\text{A}$ $T_C = 125^\circ\text{C}, L = 180\mu\text{H}, \text{Clamped}$	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	$V_{CE} = 400\text{V}, V_{BE}(\text{off}) = -1.5\text{V}$			100	$\mu\text{A}$
$I_{CEX2}$	Collector Cut-off Current	$V_{CE} = 400\text{V}, V_{BE}(\text{off}) = -1.5\text{V} @$ $T_C = 125^\circ\text{C}$			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			
$V_{CE}(\text{sat})$	* Collector-Emitter Saturation Voltage	$I_C = 10\text{A}, I_B = 2\text{A}$		0.3	1	V
$V_{BE}(\text{sat})$	* 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

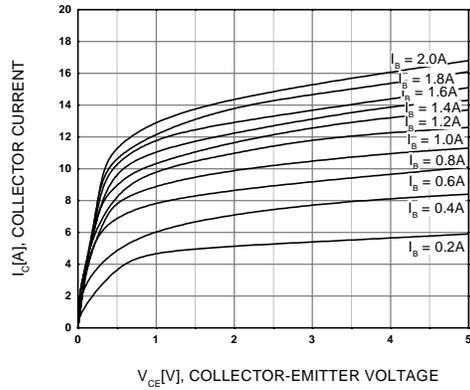


Figure 1. Static Characteristic

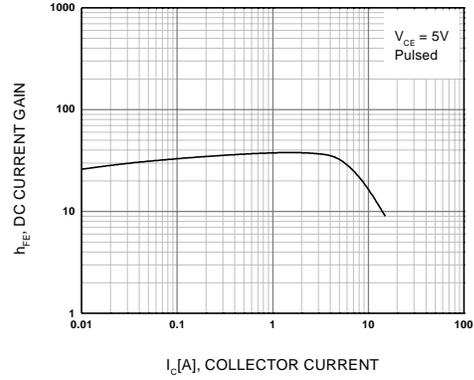


Figure 2. DC current Gain

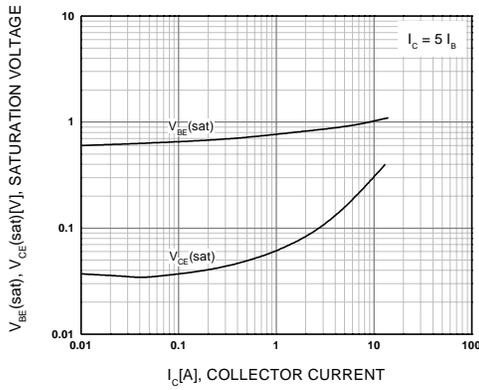


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

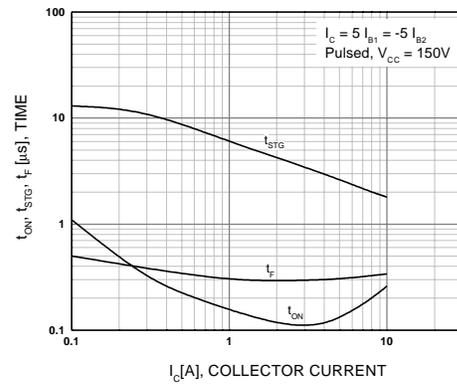


Figure 4. Switching Time

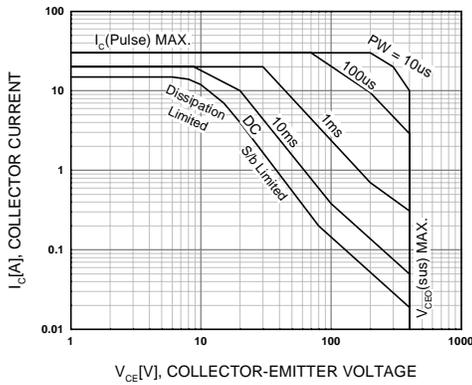


Figure 5. Safe Operating Area

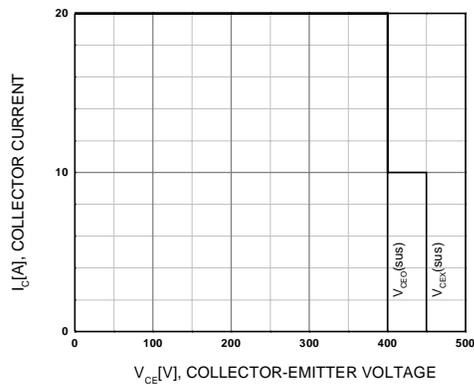


Figure 6. Reverse Bias Safe Operating Area

### Typical Characteristics (Continued)

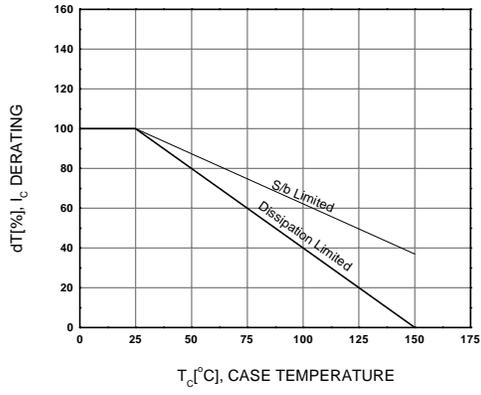


Figure 7. Derating Curve of Safe Operating Area

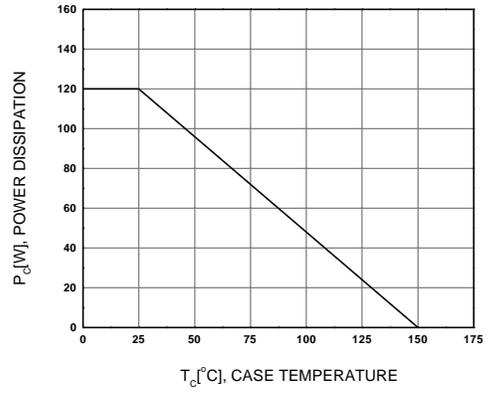
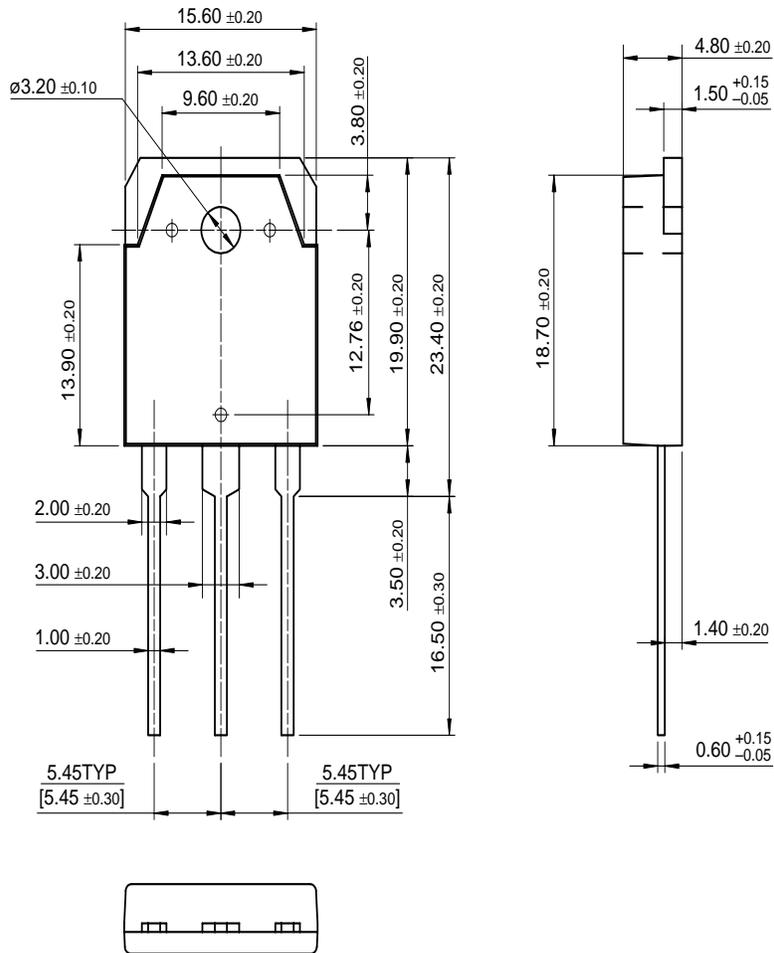


Figure 8. Power Derating

# Package Dimensions

KSC2751

## TO-3P



Dimensions in Millimeters

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E <sup>2</sup> CMOS™	PowerTrench®	VCX™
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FAST®	Quiet Series™	
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