

# FUJITSU MICROELECTRONICS

2SC2356

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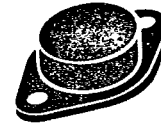
37C 01751

## SILICON HIGH SPEED TRIPLE DIFFUSED NPN POWER TRANSISTOR 10 AMP, 400 VOLT

T-33-13

### ABSOLUTE MAXIMUM RATINGS

Ratings	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	500	V
Emitter-Base Voltage	$V_{EB0}$	7	V
Collector-Emitter Voltage	$V_{CEO}$	400	V
Collector Current-Continuous	$I_C$	10	A
Base Current-Continuous	$I_B$	3	A
Collector Power Dissipation ( $T_c=25^\circ\text{C}$ )	$P_C$	100	W
Junction Temperature	$T_j$	175	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65~+175	$^\circ\text{C}$



### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Test Conditions	Limits			Unit
			MIN.	TYP.	MAX.	
Collector Cutoff Current	$I_{CB0}$	$V_{CB}=500\text{V}, I_E=0$	—	—	100	$\mu\text{A}$
Emitter Cutoff Current	$I_{EB0}$	$V_{EB}=7\text{V}, I_C=0$	—	—	100	$\mu\text{A}$
Collector Cutoff Current	$I_{CEO}$	$V_{CE}=320\text{V}, I_B=0$	—	—	500	$\mu\text{A}$
Collector-Base Breakdown Voltage	$V_{CB0}$	$I_C=100\mu\text{A}, I_E=0$	500	—	—	V
Emitter-Base Breakdown Voltage	$V_{EB0}$	$I_E=100\mu\text{A}, I_C=0$	7	—	—	V
Collector-Emitter Breakdown Voltage	$V_{CEO}$	$I_C=10\text{mA}, R_{BE}=\infty$	400	—	—	V
Collector-Emitter Breakdown Voltage	$V_{CEO(SUS)}$	$I_C=200\text{mA}, R_{BE}=\infty$	400	—	—	V
DC Current Gain	$h_{FE}$	$V_{CE}=5\text{V}, I_C=5\text{A}^*$	10	20	50	—
Output Capacitance	$C_{ob}$	$V_{CB}=20\text{V}, I_E=0, f=1\text{MHz}$	—	160	—	pF
Collector-Emitter Saturation Voltage	$V_{CE(Sat)}$	$I_C=5\text{A}, I_B=1\text{A}^*$	—	0.3	0.7	V
Base-Emitter Saturation Voltage	$V_{BE(Sat)}$		—	1.0	1.5	V
Gain-Bandwidth Product	fT	$V_{CE}=10\text{V}, I_E=1\text{A}$	—	20	—	MHz
Rise Time	tr	$I_C=7.5\text{A}, V_{CC}=150\text{V}$ $I_{B1}=-I_{B2}=1.5\text{A}$	—	0.4	1.0	$\mu\text{S}$
Storage Time	tstg		—	1.6	3.0	$\mu\text{S}$
Fall Time	tf		—	0.5	1.2	$\mu\text{S}$

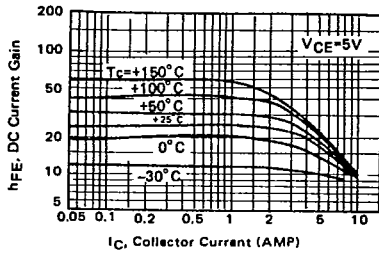
\* pulsed: pulse width  $\leq 300\mu\text{S}$ , Duty cycle  $\leq 2\%$

**PACKAGE TYPE:** TO-3 See page 5-23 for dimensions.

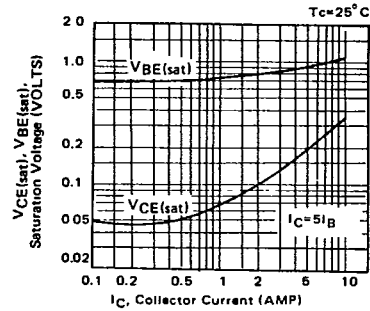
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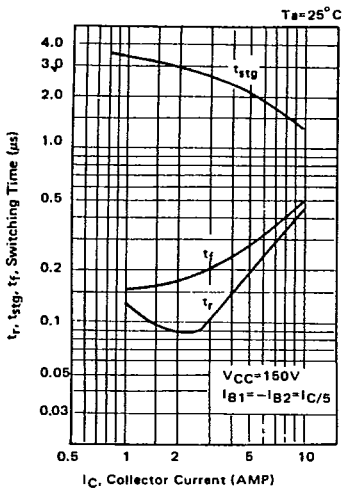
DC CURRENT GAIN



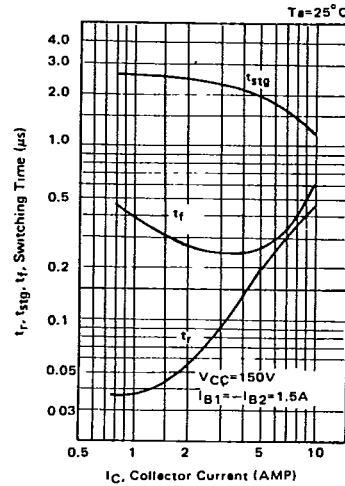
SATURATION VOLTAGE



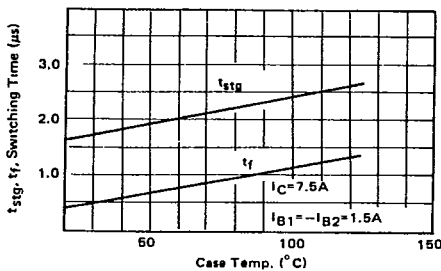
SWITCHING TIME



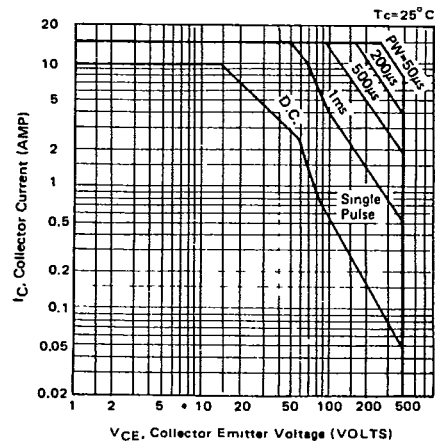
SWITCHING TIME (with constant base drive)



SWITCHING TIME



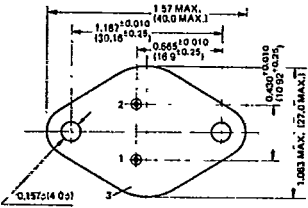
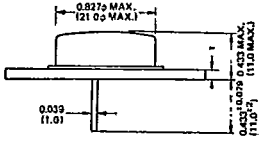
SAFE OPERATING AREAS



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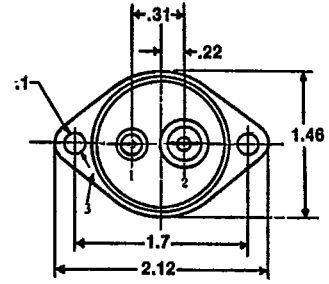
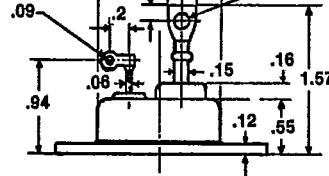
**TRANSISTOR PACKAGING INFORMATION**

**JEDEC TO-3**



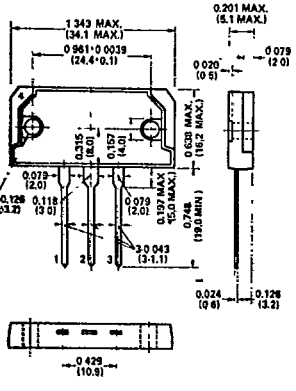
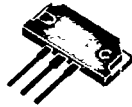
1: Base 2: Emitter 3: Collector (Case)  
Dimension in inches and (millimeters)

**MD-18**



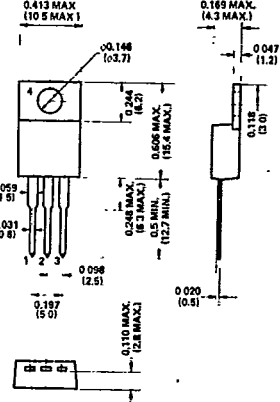
1: Base 2: Emitter 3: Collector

**RM-60**



1: Base 2: Collector 3: Emitter 4: Fin (Collector)  
Dimension in inches and (millimeters)

**JEDEC TO-220**



1: Base 2: Collector 3: Emitter 4: Fin (Collector)  
Dimension in inches and (millimeters)