

FUJITSU
MICROELECTRONICS

2SC3058A

SILICON HIGH SPEED RING EMITTER
NPN POWER TRANSISTORS 30 AMP, 450 VOLT
ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector to Emitter Voltage	V_{CEO}	450	V
Collector to Base Voltage	V_{CBO}	600	V
Emitter to Base Voltage	V_{EBO}	7	V
Collector Current-Continuous	I_C	30	A
Collector Current-Pulsed $P_W \leq 10ms, D.R. \leq 2\%$	I_{CP}	50	A
Base Current-Continuous	I_B	10	A
Collector Power Dissipation ($T_C = 25^\circ C$)	P_C	200	W
Junction Temperature	T_J	+175	$^\circ C$
Storage Temperature Range	T_{stg}	-65 ~ +175	$^\circ C$


ELECTRICAL CHARACTERISTICS ($T_B = 25^\circ C$)

Parameter	Symbol	Test Conditions	Limits			Unit
			Min.	Typ.	Max.	
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1mA, I_E = 0$	600	—	—	V
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1mA, I_C = 0$	7	—	—	V
Collector to Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 0.8A, R_{BE} = \infty$	450	—	—	V
Collector to Emitter Sustaining Voltage	$V_{CEX(sus)}$	$I_C = 10A, I_{B2} = -2A, L = 200 \mu H$ (*1)	450	—	—	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 500V, I_E = 0$	—	—	100	μA
Collector Cutoff Current	I_{CBO}	$V_{CB} = 500V, I_E = 0, T_C = 100^\circ C$	—	—	2	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 6V, I_C = 0$	—	—	100	μA
DC Current Gain	h_{FE}	$V_{CE} = 5V, I_C = 20A$ (*2)	10	12	40	—
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 20A, I_B = 4A$ (*2)	—	0.7	1.0	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$		—	1.25	1.5	V
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	420	—	pF
Gain Bandwidth Product	f_T	$V_{CE} = 10V, I_C = 4A$	—	30	—	MHz
Rise Time	t_r	$V_{CC} = 150V$ (*1) $I_C = 20A, I_{B1} = -I_{B2} = 4A$	—	0.20	0.5	μs
Storage Time	t_{stg}		—	1.70	2.0	μs
Fall Time	t_f		—	0.10	0.3	μs

*1 Test Circuit *2 Pulsed $P_W \leq 300 \mu s$, Duty Ratio $\leq 6\%$

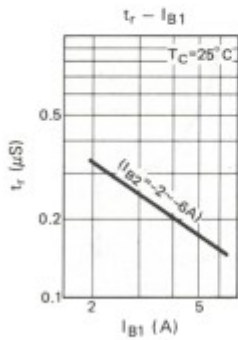
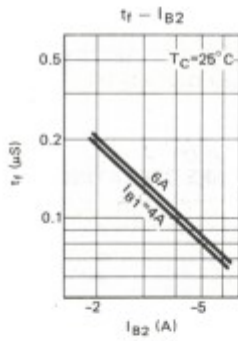
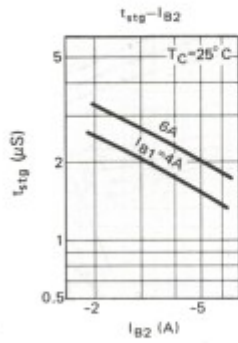
PACKAGE TYPE: TO-3. See page 5-23 for dimensions.



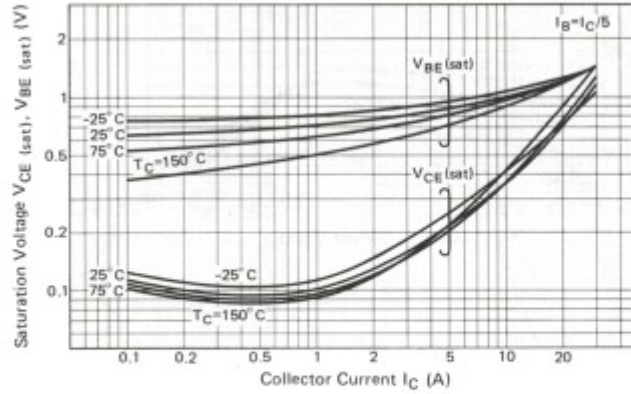
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SWITCHING TIME

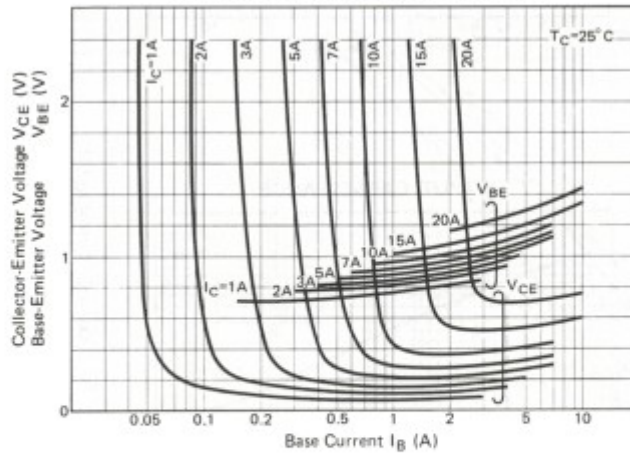
$V_{CC}=150V$
 $I_C=20A$
 $F_W=50\mu S$
 Duty Ratio = 1%

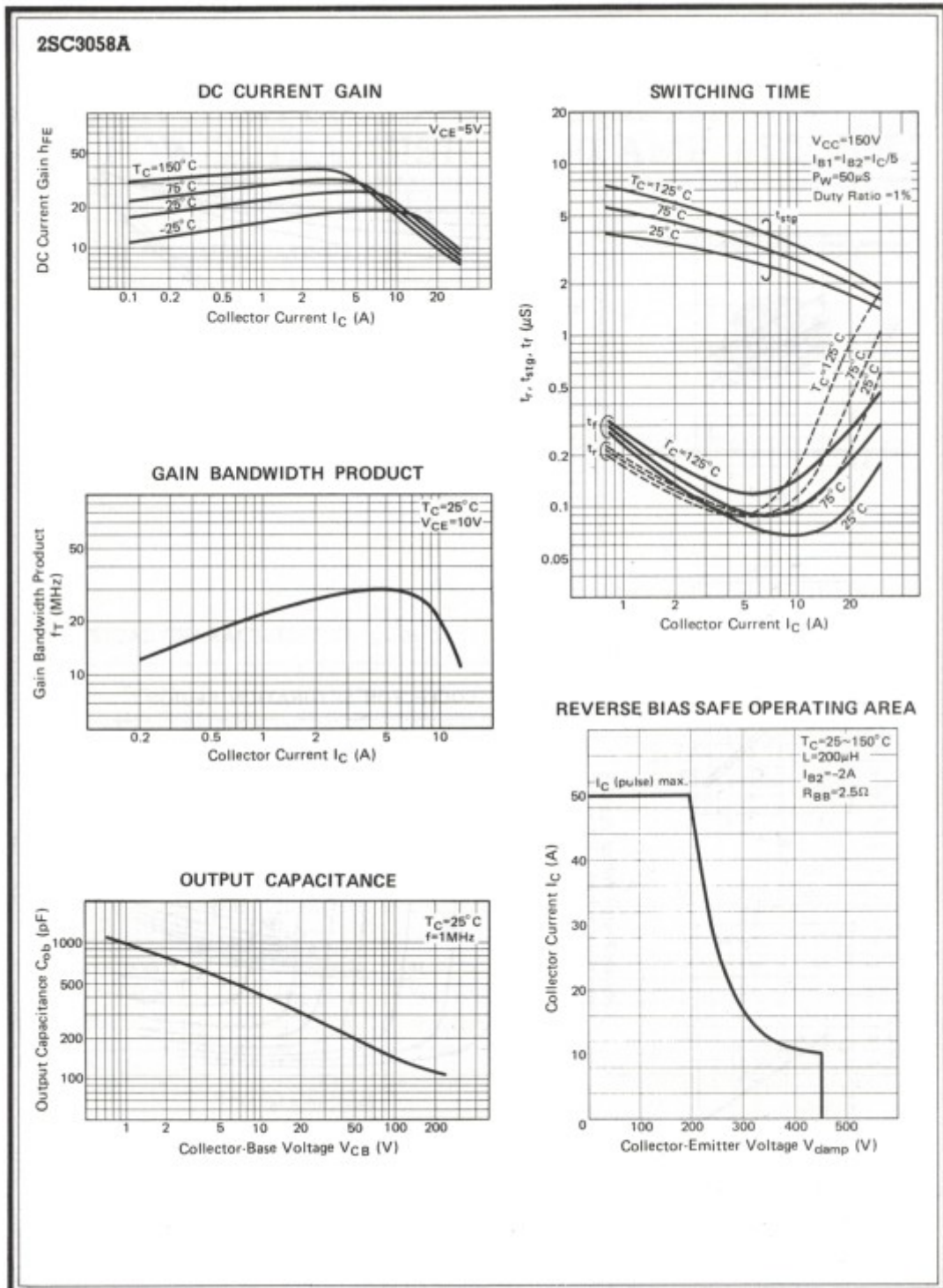


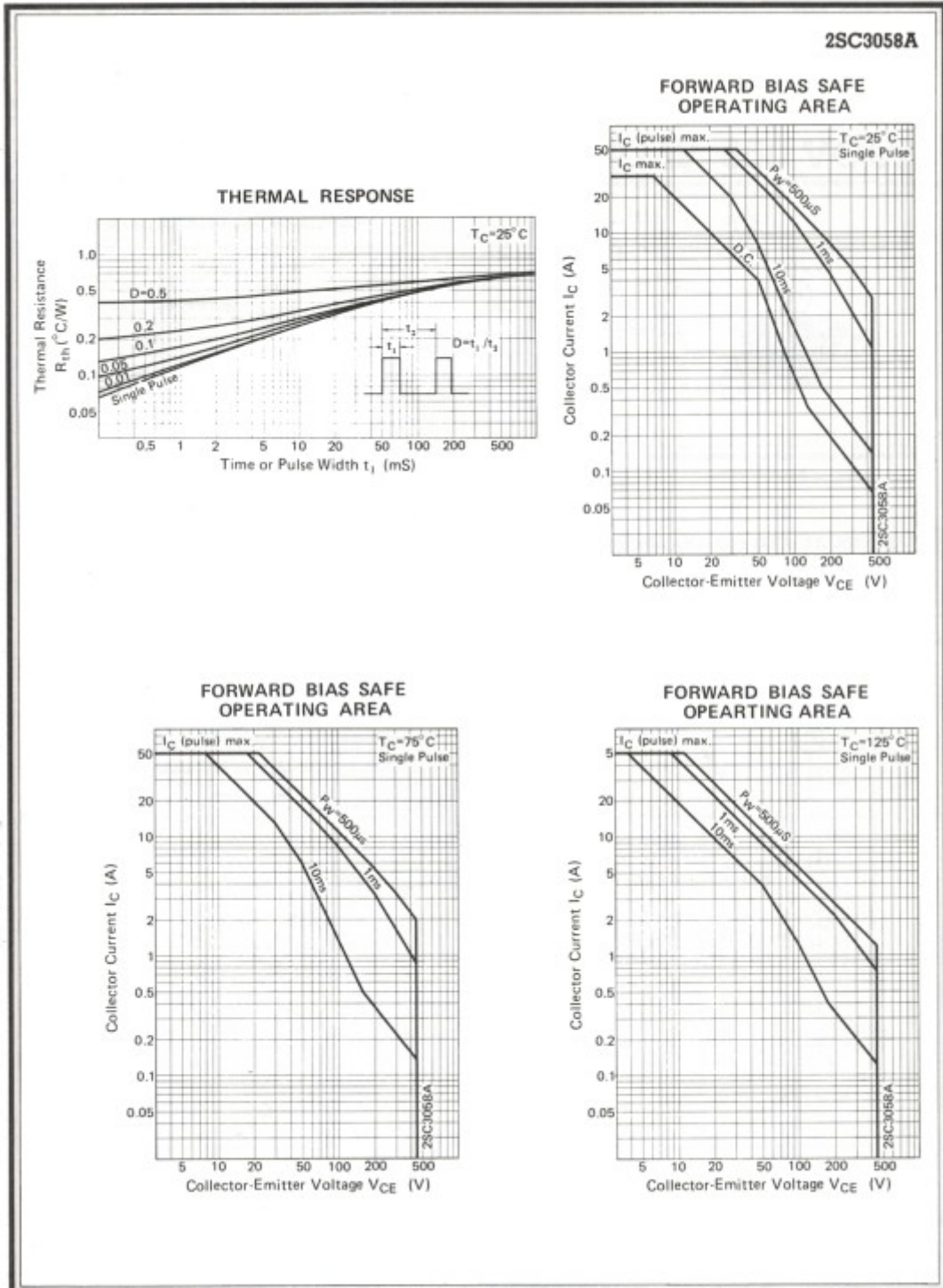
SATURATION VOLTAGE



COLLECTOR SATURATION REGION

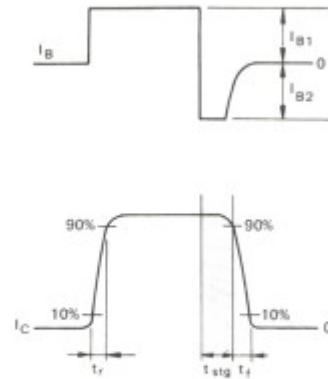
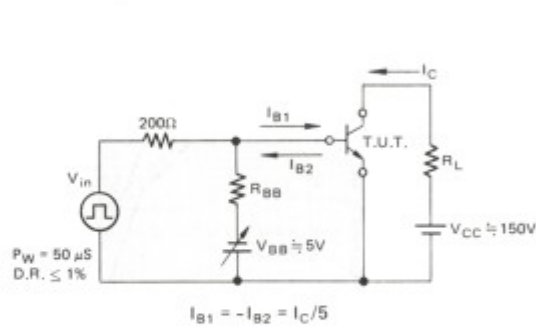




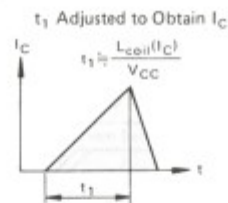
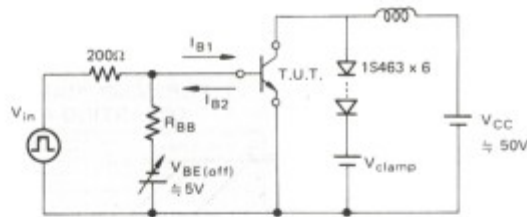


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TEST CIRCUIT USED FOR MEASUREMENT OF SWITCHING TIME (RESISTIVE)



TEST CIRCUIT USED FOR MEASUREMENT OF $V_{CEX(SUS)}$ AND REVERSE BIAS SAFE OPERATING AREA



- (a) $V_{CEX(SUS)}$
 $I_C = 10A, I_{B1} = 4A, I_{B2} = -2A, R_{BB} = 2.5\Omega, V_{clamp} = 450V$
- (b) Reverse Bias Safe Operating Area
 $I_{B1} \leq 8A, I_{B2} = -2A, R_{BB} = 2.5\Omega$



TRANSISTOR PACKAGING INFORMATION

