

**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 ($T_B = 25^\circ C$)

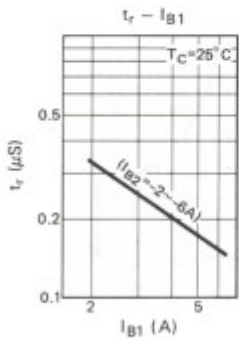
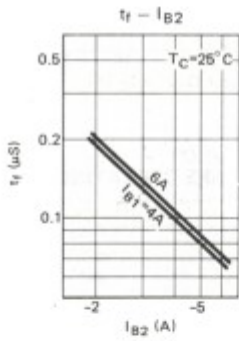
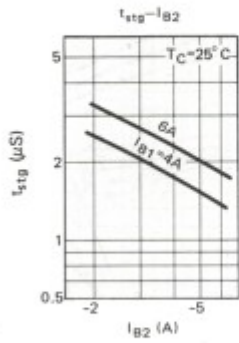
| Parameter | Symbol | Test Conditions | Limits | | | Unit |
|-----------------------------------------|----------------|------------------------------------------------------------|--------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| Collector to Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C = 1mA, I_E = 0$ | 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.

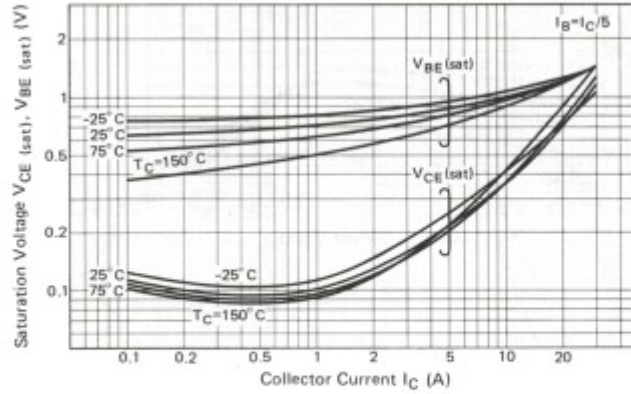

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SWITCHING TIME

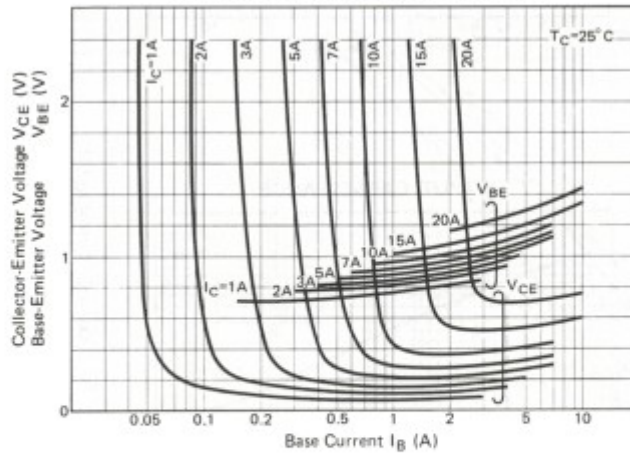
$V_{CC}=150V$
 $I_C=20A$
 $F_W=50\mu S$
 Duty Ratio = 1%

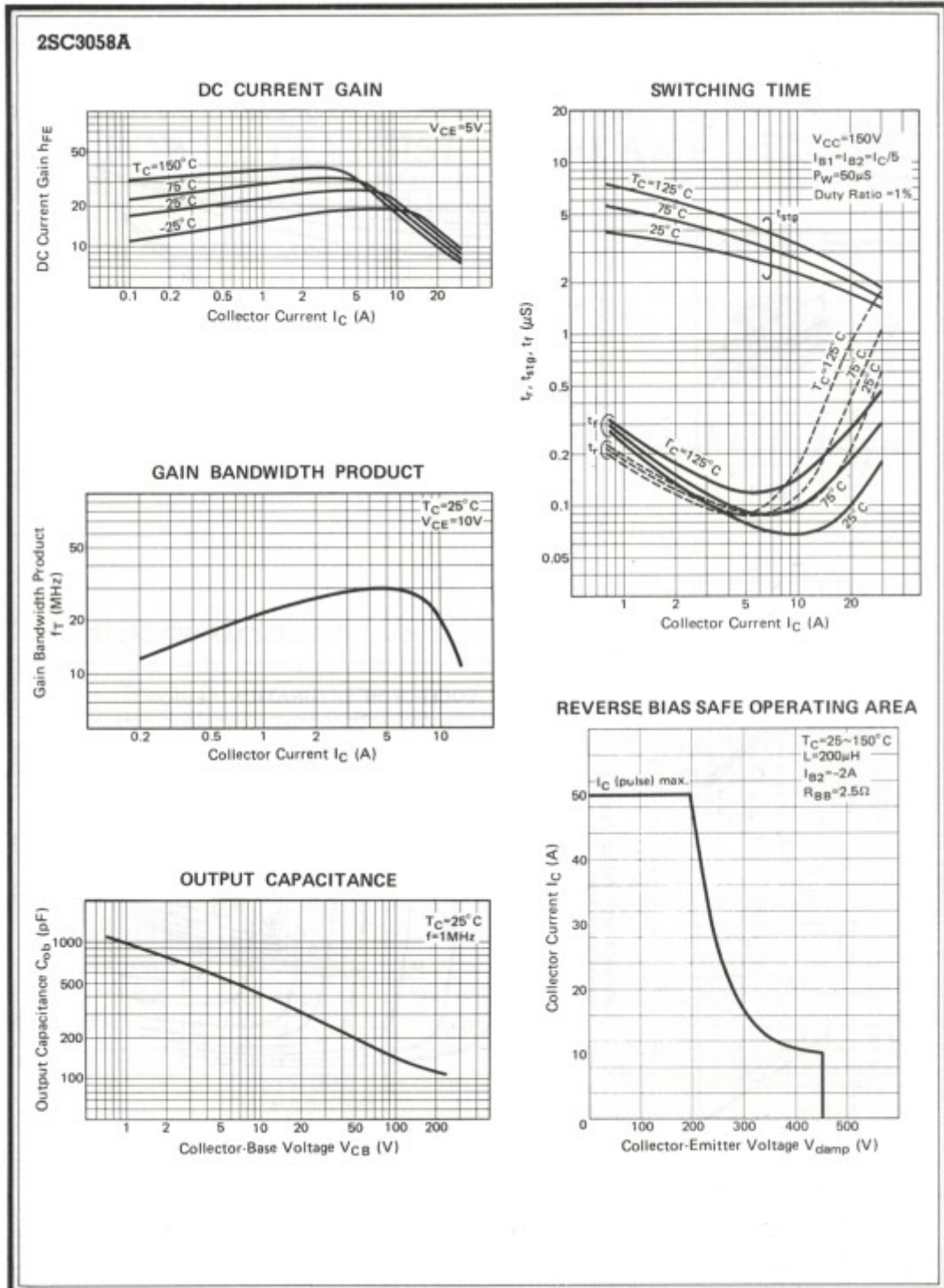


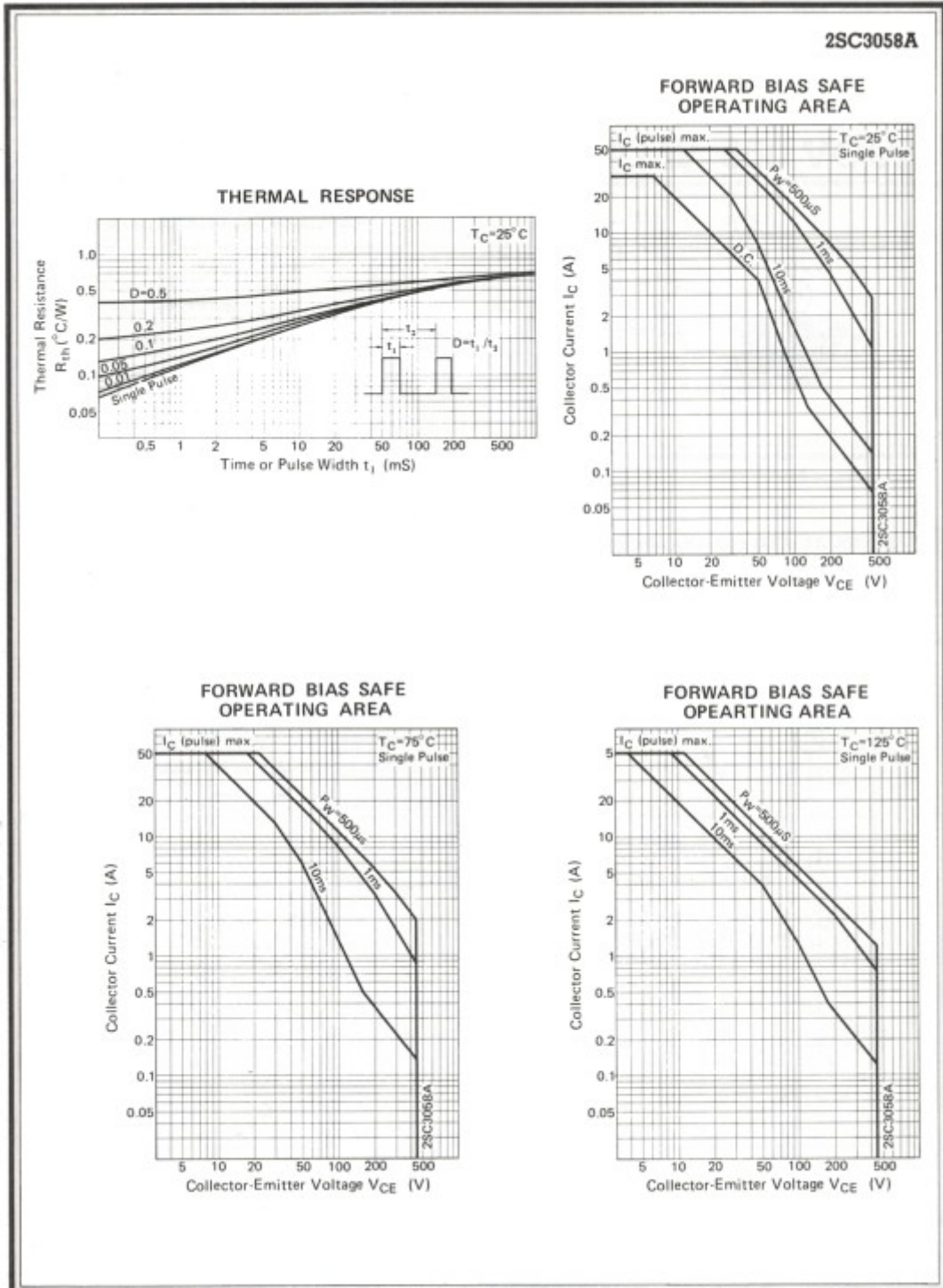
SATURATION VOLTAGE



COLLECTOR SATURATION REGION

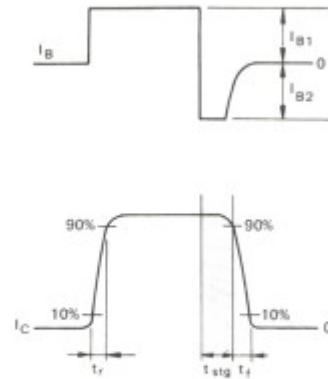
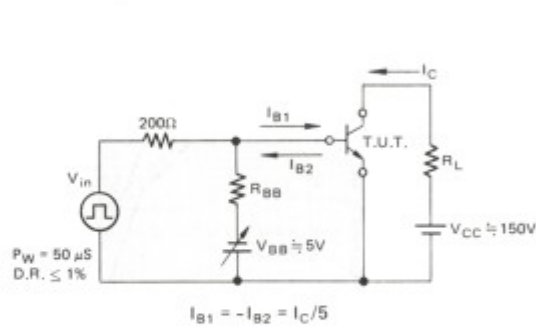




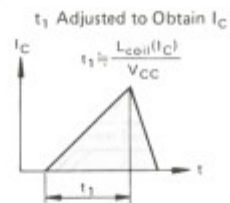
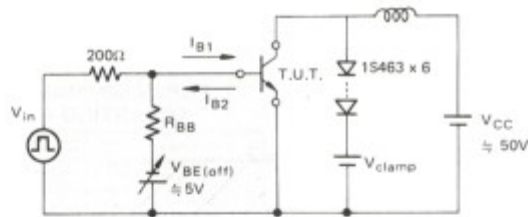


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TEST CIRCUIT USED FOR MEASUREMENT OF SWITCHING TIME (RESISTIVE)



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



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



TRANSISTOR PACKAGING INFORMATION

