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 ($T_C = 25°C$)	P_C	200	W
Junction Temperature	T_j	+175	°C
Storage Temperature Range	T_{stg}	−65 ~ +175	°C

ELECTRICAL CHARACTERISTICS ($T_a = 25°C$)

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	$V_{CEO(sus)}$	$I_C = 0.8A$, $R_{BE} = \infty\Omega$	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}	$V_{CB} = 500V$, $I_E = 0$, $T_C = 100°C$	–	–	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

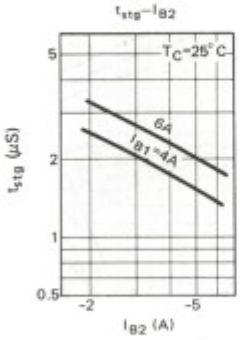
*1 Test Circuit *2 Pulsed $P_W \leq 300\mu s$, Duty Ratio $\leq 6\%$

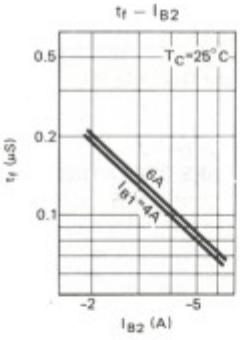
PACKAGE TYPE: TO-3. See page 5-23 for dimensions.

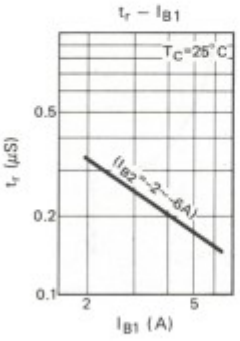
2SC3058A

SWITCHING TIME

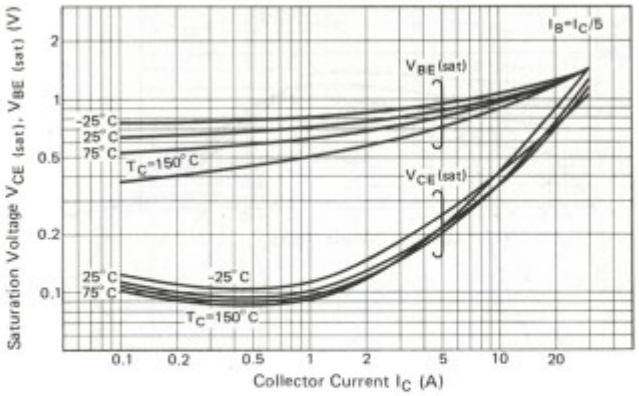
V_{CC}=150V
I_C=20A
P_W=50μS
Duty Ratio =1%



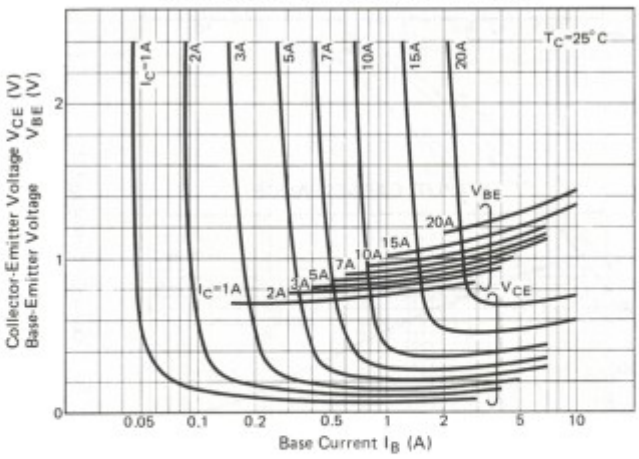




SATURATION VOLTAGE



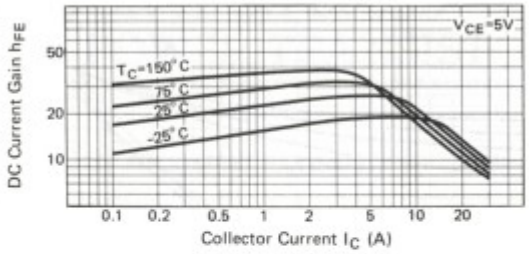
COLLECTOR SATURATION REGION



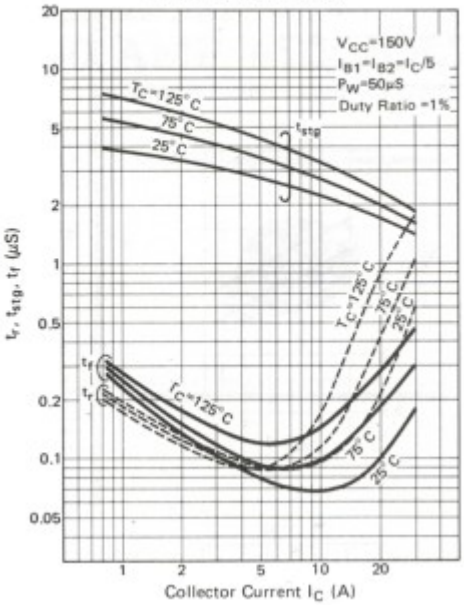
OEM: Fujitsu	C3058A / 2SC3058A	Datasheet

2SC3058A

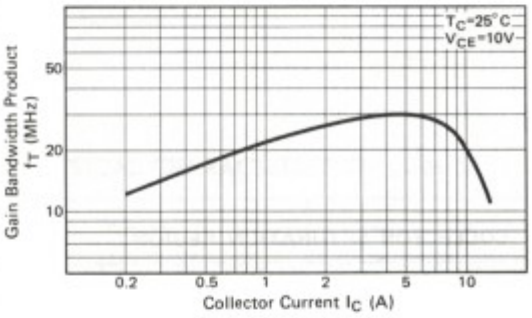
DC CURRENT GAIN



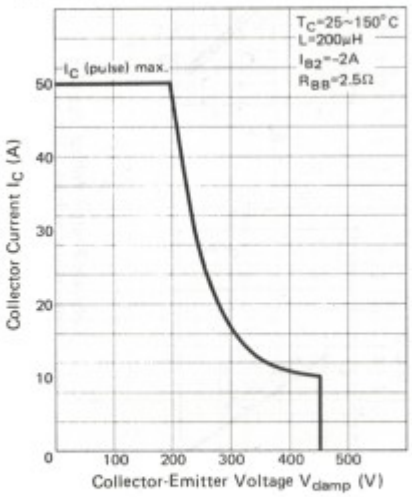
SWITCHING TIME



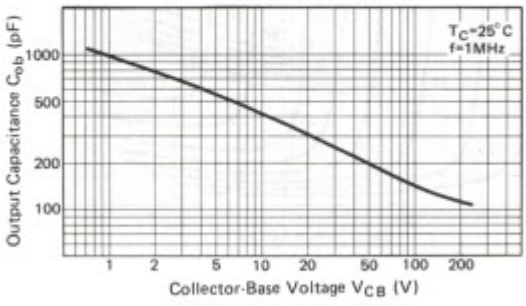
GAIN BANDWIDTH PRODUCT



REVERSE BIAS SAFE OPERATING AREA



OUTPUT CAPACITANCE



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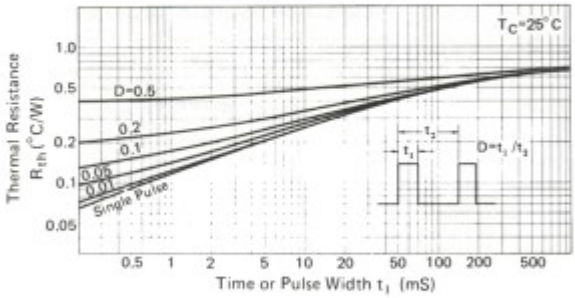
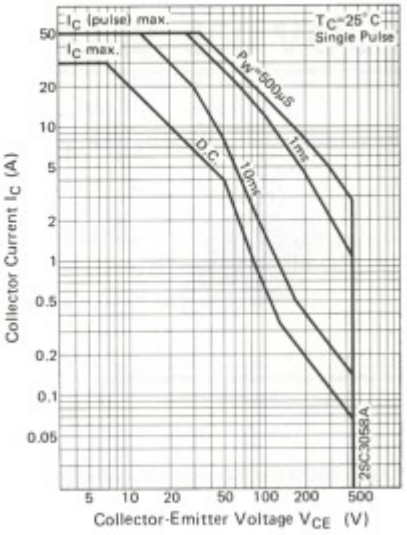
2SC3058A

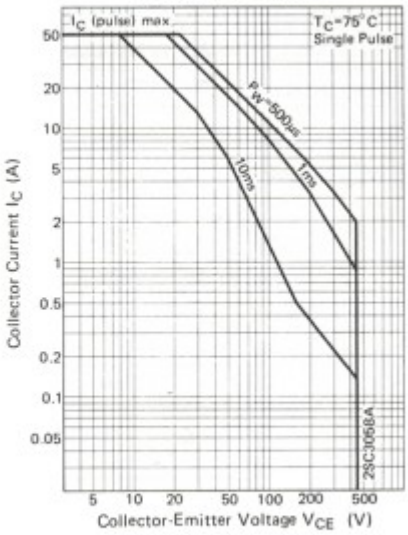
THERMAL RESPONSE



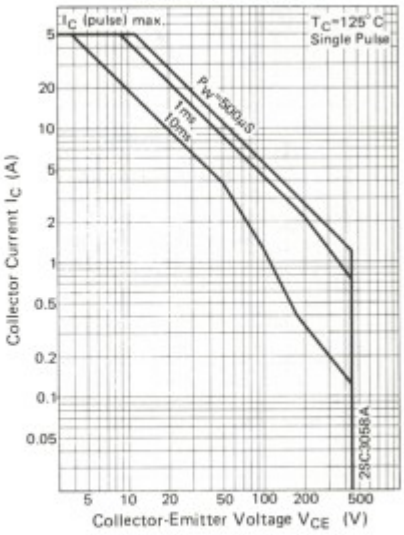
FORWARD BIAS SAFE OPERATING AREA



FORWARD BIAS SAFE OPERATING AREA

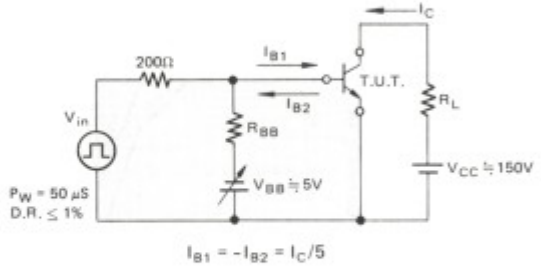


FORWARD BIAS SAFE OPEARTING AREA

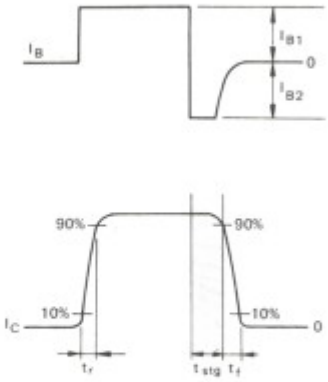


2SC3058A

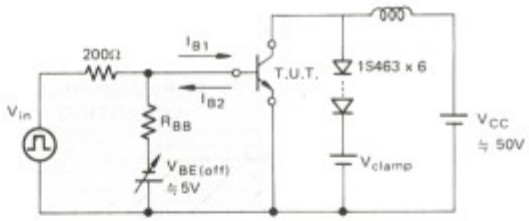
TEST CIRCUIT USED FOR MEASUREMENT OF SWITCHING TIME (RESISTIVE)

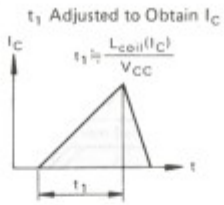


$I_{B1} = -I_{B2} = I_C/5$



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
$I_{B1} \leq 8A,\ I_{B2} = -2A,\ R_{BB} = 2.5\Omega$

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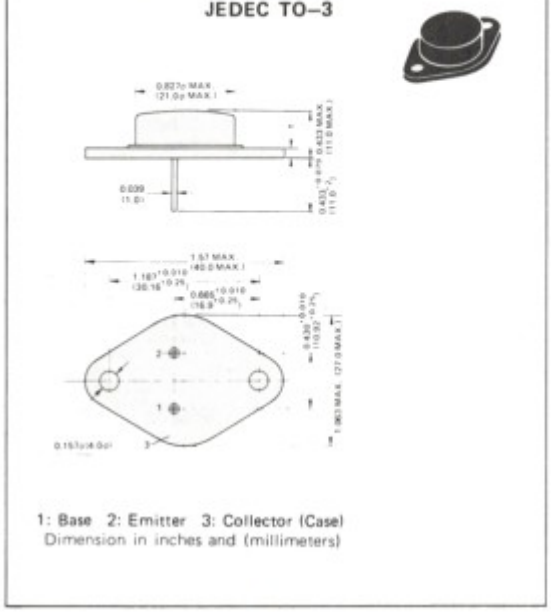
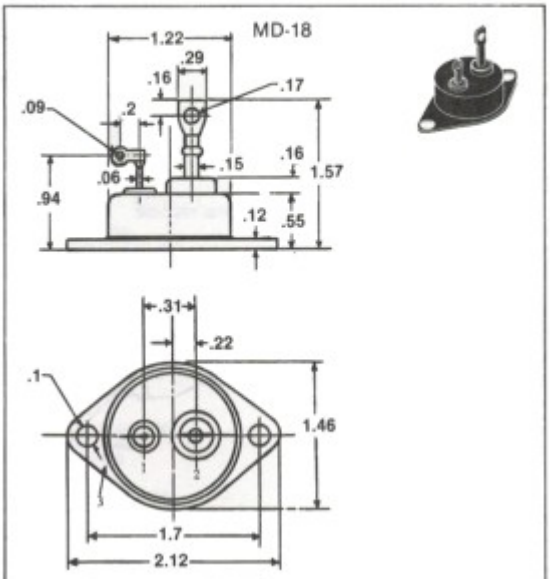
TRANSISTOR PACKAGING INFORMATION

JEDEC TO–3



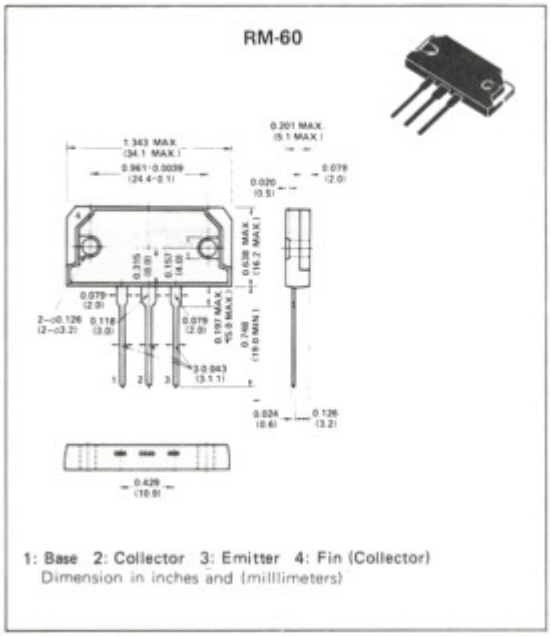
1: Base 2: Emitter 3: Collector (Case)
Dimension in inches and (millimeters)

MD-18



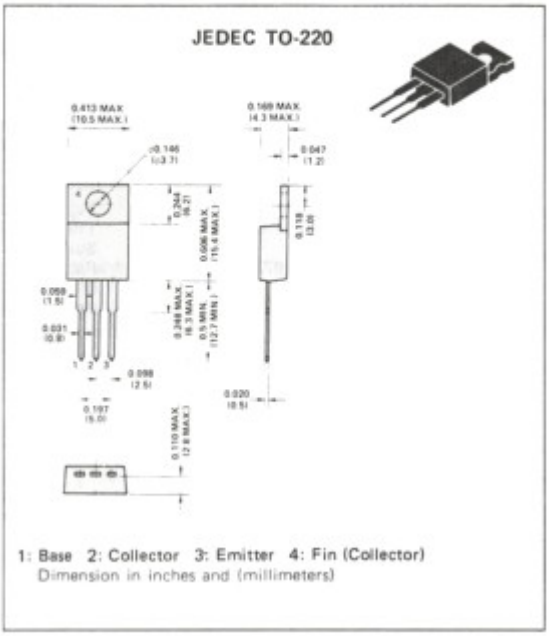
1: Base 2: Emitter 3: Collector

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)