2SD777

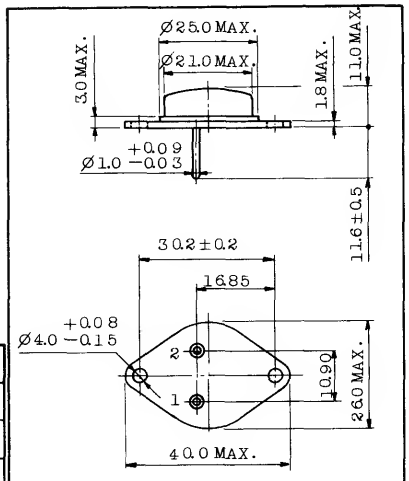
SILICON NPN DOUBLE DIFFUSED TYPE
(PCT PROCESS)

POWER REGULATOR FOR LINE OPERATED
TV APPLICATIONS.

FEATURES:

- Excellent Wide Safe Operating Area
  (100 W·S at Tc=25°C).
- Included Abalanche Diode. : V_Z=55±10V
- High D.C Current Gain. : $h_{FE} \geq 500$
- High Collector Power Dissipation Capability :
  100 W at 25°C Case Temperature.

Unit in mm



1. BASE
2. EMITTER
   COLLECTOR (CASE)

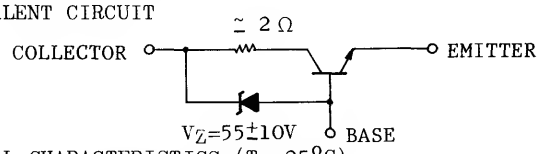
JEDEC	TO-3
EIAJ	TC-3, TB-3
TOSHIBA	2-21A1A

Mounting kit No. AC73
Weight : 12.0g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	55±10	V
Collector-Emitter Voltage	V_{CEO}	55±10	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current(Continuous)	I_C	4	A
Collector Current (Peak)	I_{CP}	20	A
Collector Power Dissipation (Tc=25°C)	P_C	100	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-65~150	°C

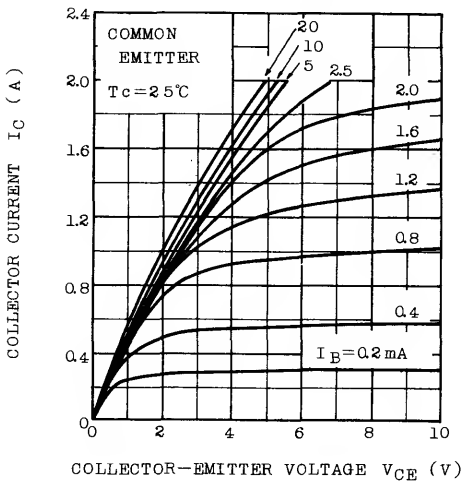
EQUIVALENT CIRCUIT



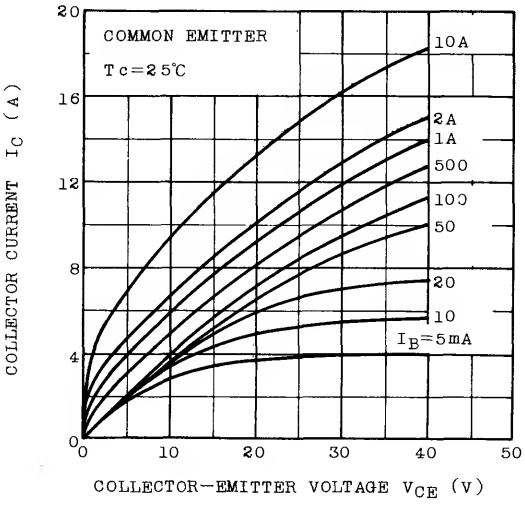
ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10mA, I_E=0	45	55	65	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=100mA, I_B=0	45	55	65	V
Emitter Cut-off Current	I_{EBO}	V_{EB}=6V, I_C=0	-	-	10	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=500mA	500	1000	2500	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$ (1)	I_C=500mA, I_B=2mA	-	-	2.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$ (2)	I_C=1.0A, I_B=20mA	1.0	2.0	3.0	V
Base-Emitter Voltage	V_{BE}	V_{CE}=5V, I_C=500mA	0.50	0.65	0.80	V
Allowable Energy (Tc=25°C)	E_T	Application Circuit	100	-	-	W·sec

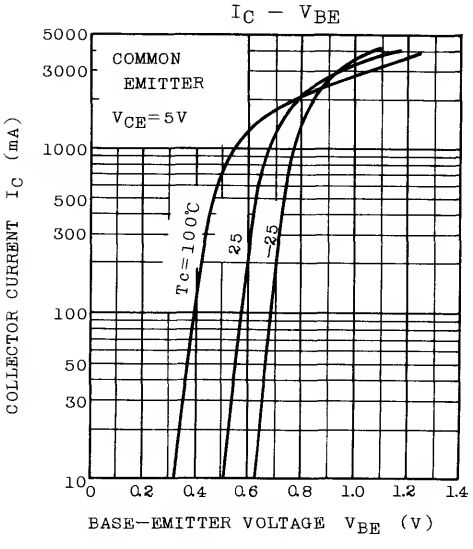
I_C - V_{CE}



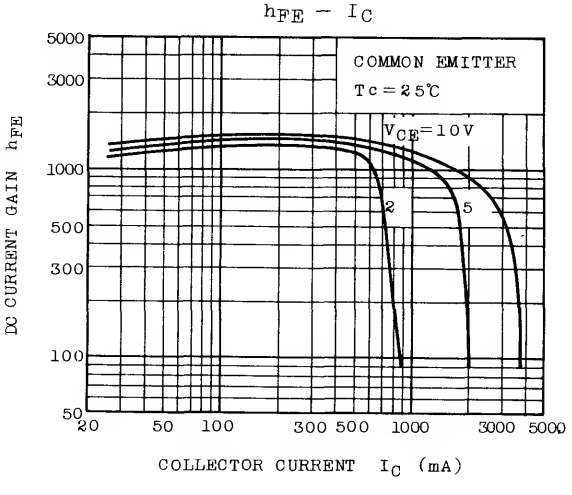
I_C - V_{CE}



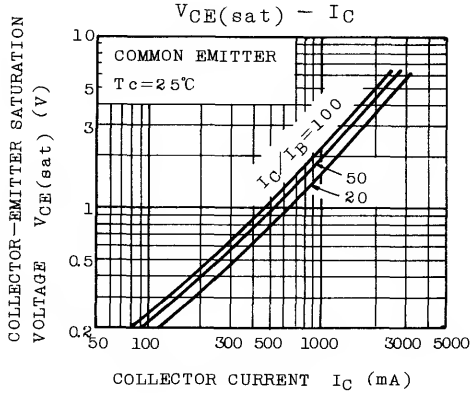
I_C - V_{BE}



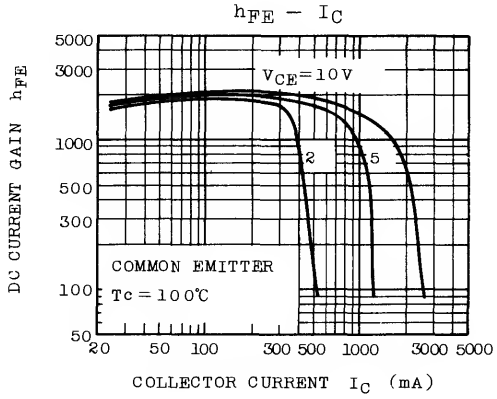
h_{FE} - I_C



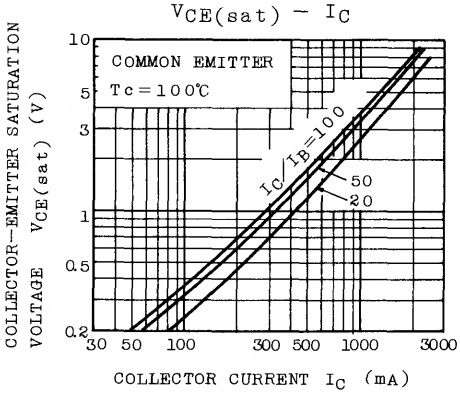
$V_{CE(sat)}$ – I_C



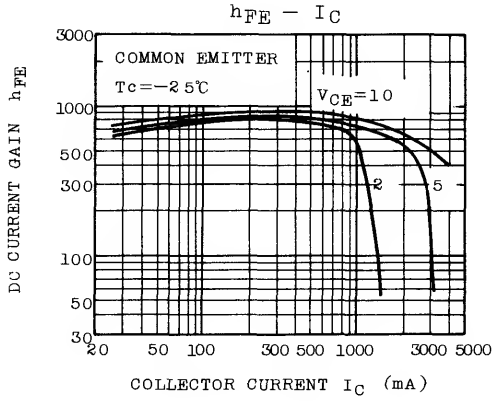
h_{FE} – I_C



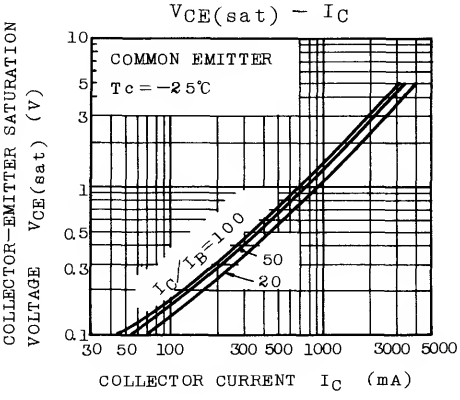
$V_{CE(sat)}$ – I_C



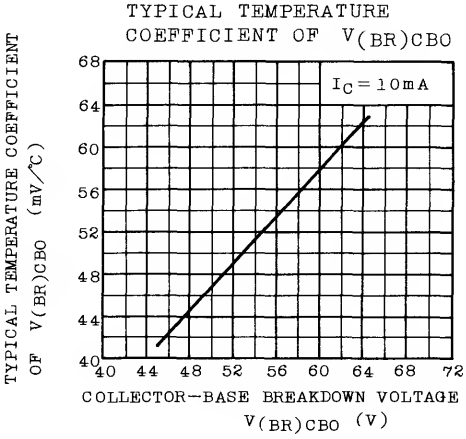
h_{FE} – I_C

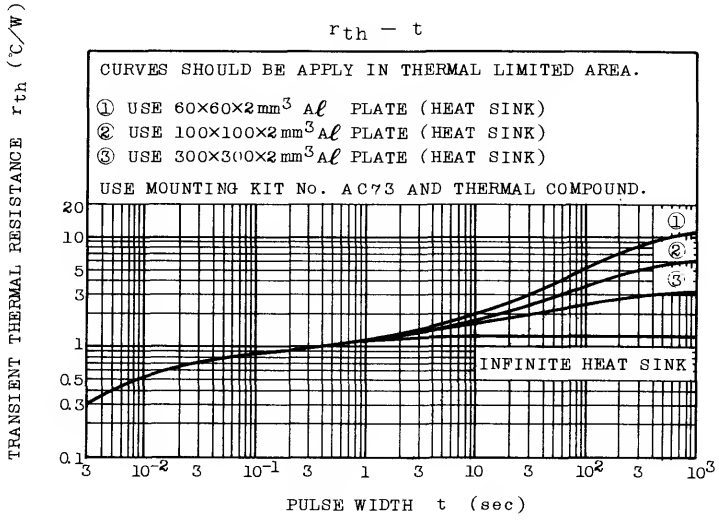


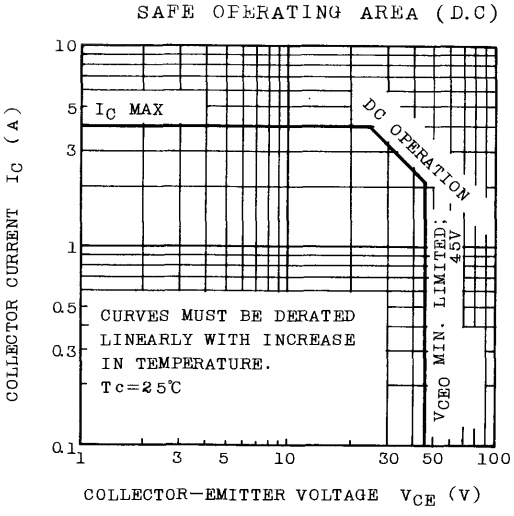
$V_{CE(sat)}$ – I_C

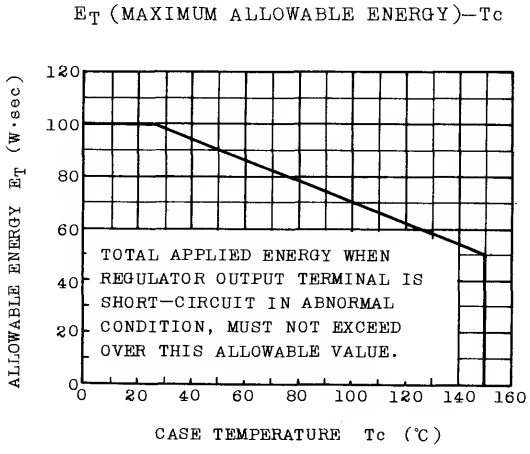


TYPICAL TEMPERATURE COEFFICIENT OF $V_{(BR)CBO}$

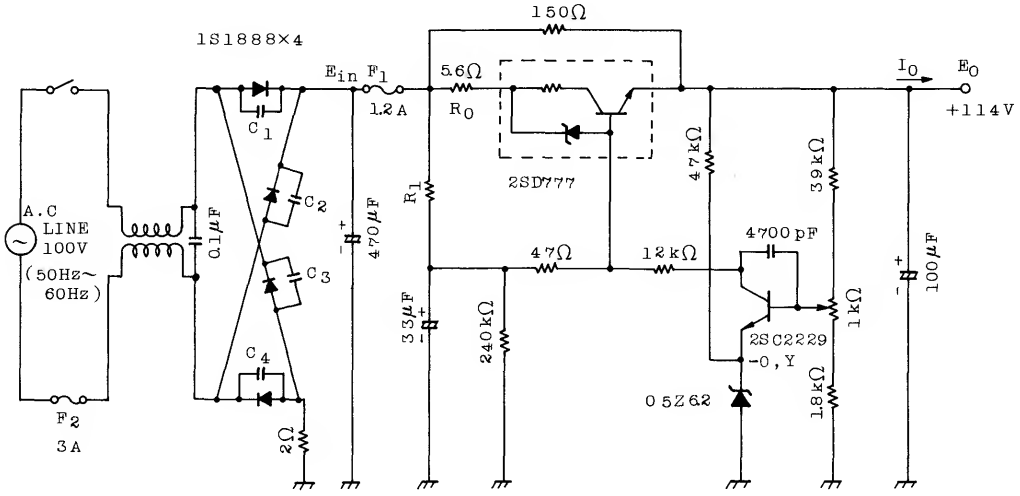



r_{th} — t
CURVES SHOULD BE APPLY IN THERMAL LIMITED AREA.
① USE 60×60×2mm³ Aℓ PLATE (HEAT SINK)
② USE 100×100×2mm³ Aℓ PLATE (HEAT SINK)
③ USE 300×300×2mm³ Aℓ PLATE (HEAT SINK)
USE MOUNTING KIT No. AC73 AND THERMAL COMPOUND.
INFINITE HEAT SINK
TRANSIENT THERMAL RESISTANCE r_{th} (℃/W)
PULSE WIDTH t (sec)


SAFE OPERATING AREA (D.C)
I_C MAX
DC OPERATION
V_{CEO} MIN. LIMITED: 45V
CURVES MUST BE DERATED LINEARLY WITH INCREASE IN TEMPERATURE.
Tc=25℃
COLLECTOR CURRENT I_C (A)
COLLECTOR—EMITTER VOLTAGE V_{CE} (V)

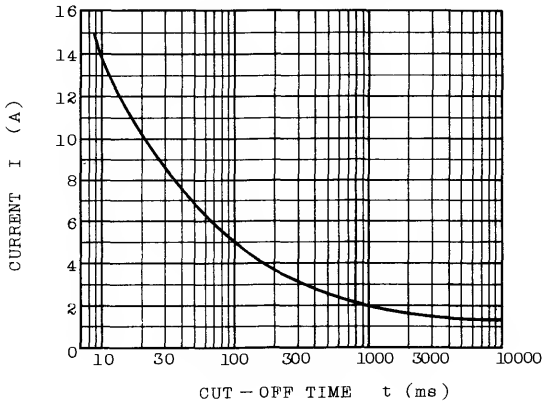

E_T (MAXIMUM ALLOWABLE ENERGY)—Tc
TOTAL APPLIED ENERGY WHEN REGULATOR OUTPUT TERMINAL IS SHORT—CIRCUIT IN ABNORMAL CONDITION, MUST NOT EXCEED OVER THIS ALLOWABLE VALUE.
ALLOWABLE ENERGY E_T (W·sec)
CASE TEMPERATURE Tc (℃)

APPLICATION CIRCUIT

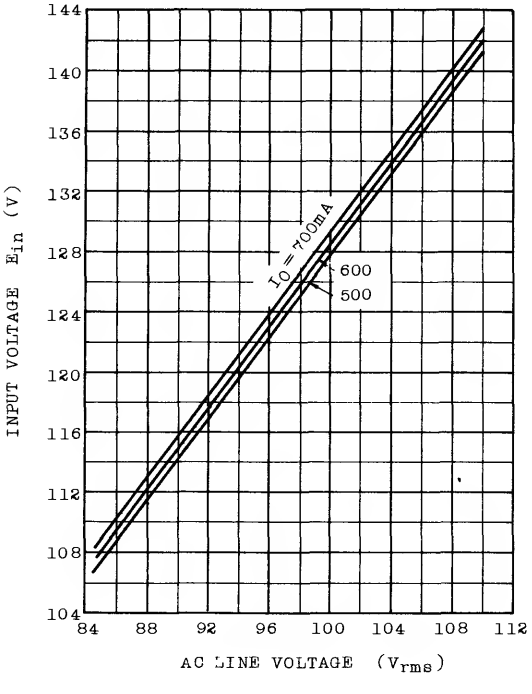


C_1, C_2, C_3, C_4 : 0.0047μF

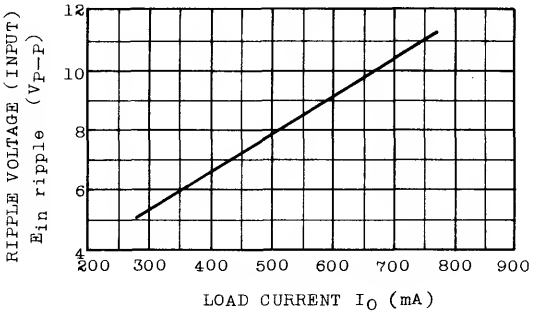
FUSE F_1 ; I – t CHARACTERISTIC



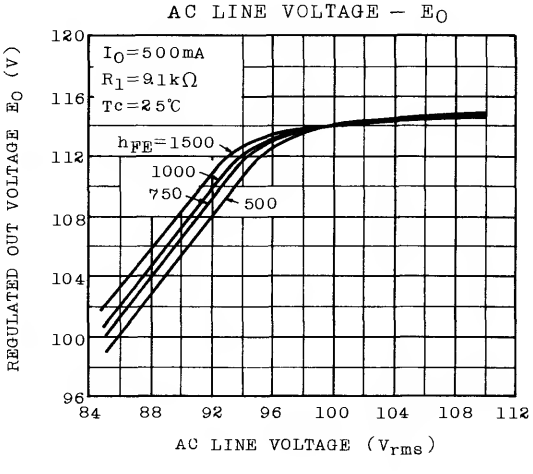
AC LINE VOLTAGE — E_{in}



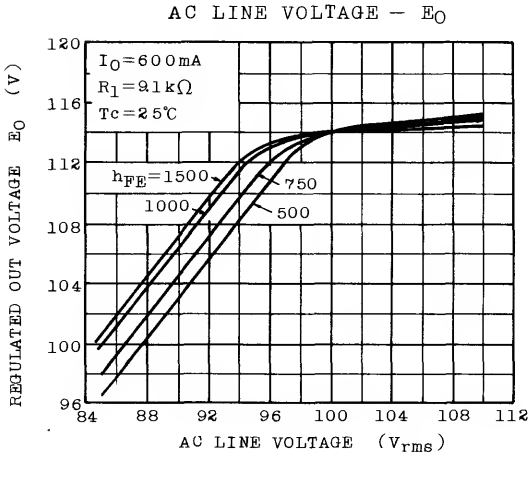
I_O — E_{in} ripple



AC LINE VOLTAGE — E_O



AC LINE VOLTAGE — E_O



AC LINE VOLTAGE — E_O