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2SD647A
2SD697A

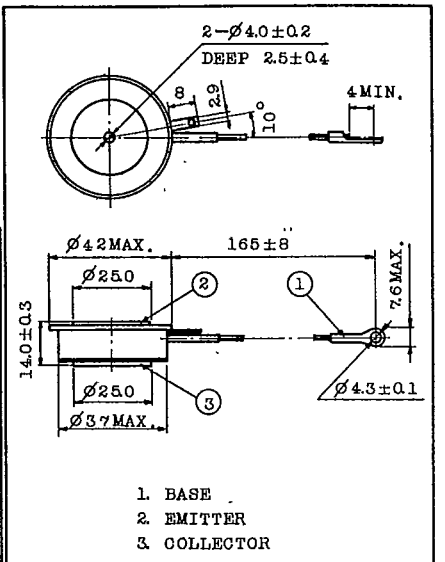
SILICON NPN TRIPLE DIFFUSED MESA TYPE
(DARLINGTON POWER)

INDUSTRIAL APPLICATIONS

HIGH POWER SWITCHING APPLICATIONS.
DC-AC POWER INVERTER APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

FEATURES:
- High Voltage : $V_{CEO(SUS)} \geqq 450V$ (2SD697A)
- Triple Diffused Design.
- Darlington Design.

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-42A1A

Weight : 70g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	2SD647A	V_{CBO}	800	V
	2SD697A		500	
Collector-Emitter Voltage	2SD647A	$V_{CEO(SUS)}$	600	V
	2SD697A		450	
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	100	A
Emitter Current		I_E	-100	A
Base Current		I_B	6	A
Thermal Resistance (Double Side Cooling)		$R_{th(j-c)}$	0.13	°C/W
Junction Temperature		T_j	125	°C
Storage Temperature Range		T_{stg}	-40 ~ 150	°C
Mounting Force Required		F	400±40	kg

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
DC Current Gain		h_{FE}	V_{CE}=5V, I_C=100A	100	-	-	
			V_{CE}=5V, I_C=50A	-	500	-	
Collector-Emitter Sustaining Voltage	2SD647A	$V_{CEO(SUS)}$	I_C=0.5A, L=40mH	600	-	-	V
	2SD697A			450			
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=100A, I_B=2A (Note)	-	-	2.0	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$		-	-	2.5	V
Collector Cut-off Current	2SD647A	I_{CBO}	V_{CB}=800V, I_E=0	-	-	2	mA
	2SD697A		V_{CB}=500V, I_E=0	-	-	2	
Emitter Cut-off Current		I_{EBO}	V_{EB}=5V, I_C=0	-	-	200	mA
Switching Time	Turn-on Time	t_{on}	I_C=100A, I_{B1}=2A, $-I_{B2}$=2A, V_C=300V	-	2.5	-	μs
	Storage Time	t_{stg}		-	20	-	μs
	Fall Time	t_f		-	4	-	μs

Note : Pulse Test; Pulse Width ≦ 300μs , Duty Cycle ≦ 3%
Mounting Force; F=400kg

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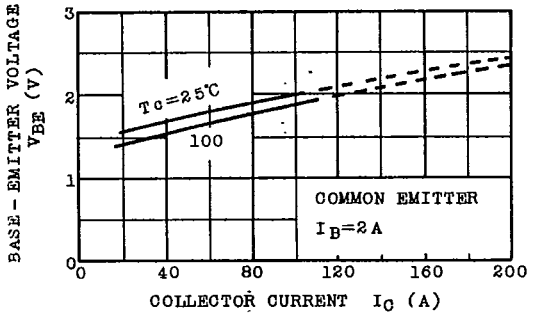
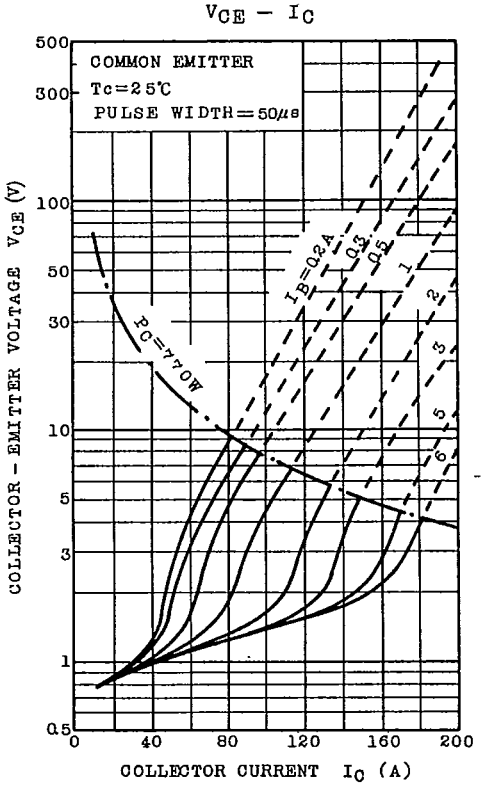
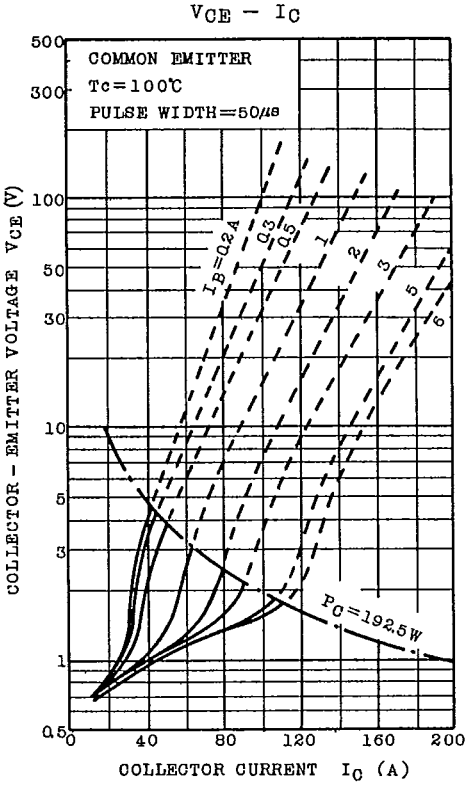
$V_{BE(sat)} - I_C$



$V_{CE} - I_C$



$V_{CE} - I_C$



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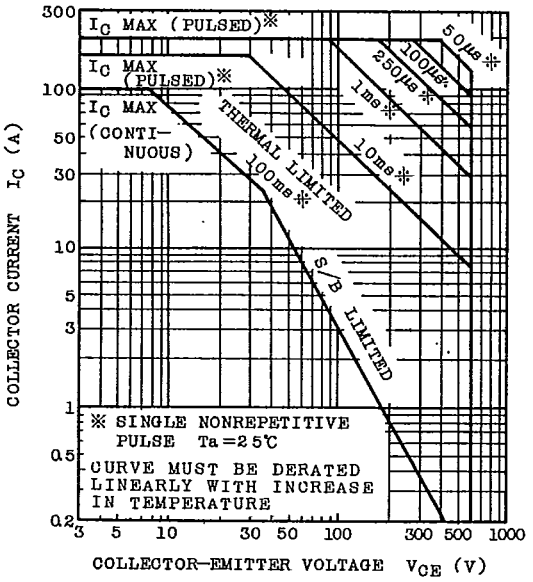
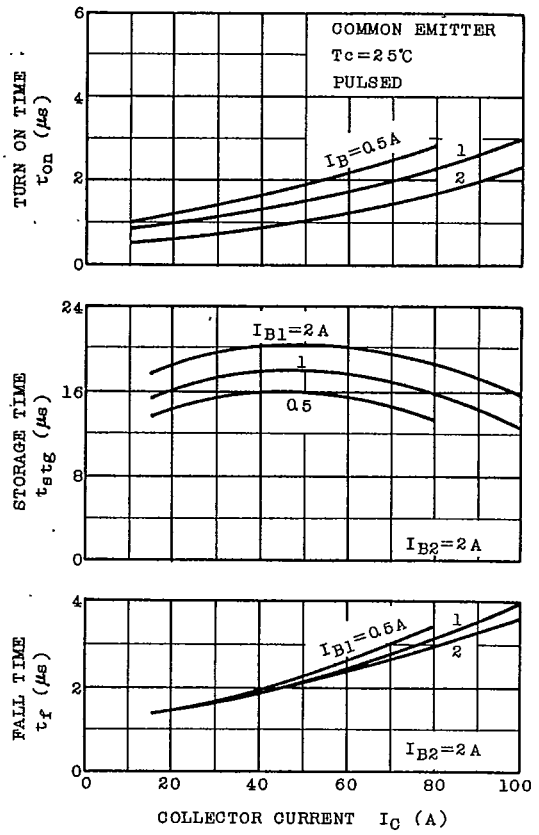
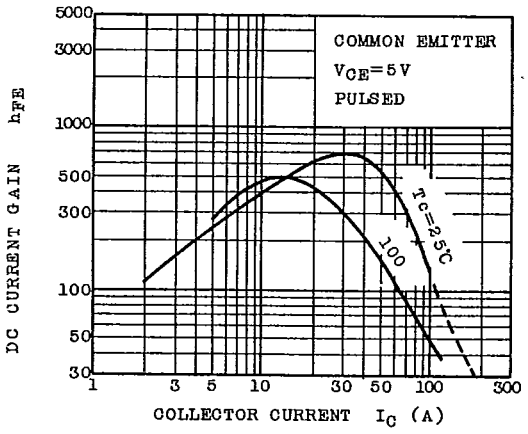
SAFE OPERATING AREA



SWITCHING CHARACTERISTICS



h_{FE} – I_C



MAXIMUM TRANSIENT THERMAL IMPEDANCE (JUNCTION - CASE)