2N4399

SILICON PNP TRIPLE DIFFUSED TYPE

HIGH POWER SWITCHING, AMPLIFIER, DC-DC CONVERTER, INVERTER AND REGULATOR APPLICATIONS

FEATURES:

. Specification for h_{FE} and $V_{CE(sat)}$ Up to 30A :

h_{FE}=5.0 (Min.) @ V_{CE}=-4.0V, I_C=-30A

$V_{CE(sat)}$=-4.0V (Max.) @ I_C=-30A, I_B=-6A

. Low Saturation Voltage :

$V_{CE(sat)}$=-0.75V (Max.) @ I_C=-10A, I_B=-1.0A

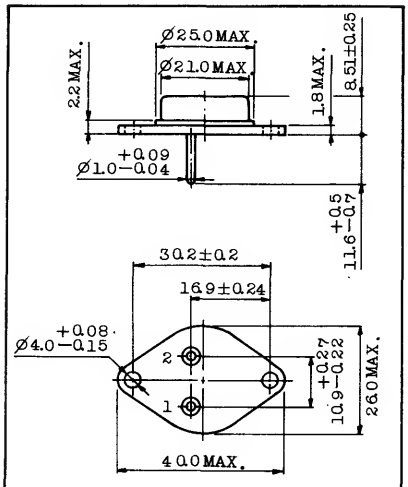
$V_{BE(sat)}$=-1.6V (Max.) @ I_C=-10A, I_B=-1.0A

. High Collector Power Dissipation Capability :

P_C=200W (Max.)

. Complementary to 2N5302

Unit in mm



1. BASE
2. EMITTER
COLLECTOR (CASE)

JEDEC	TO-204MA/TO-3
EIAJ	TC-3, TB-3
TOSHIBA	2-21D1A

Weight : 12.6g

MAXIMUM RATINGS (Ta=25°C)

	CHARACTERISTIC		SYMBOL	RATING	UNIT
※	Collector-Base Voltage		V_{CBO}	-60	V
※	Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$	-60	V
※	Emitter-Base Voltage		V_{EBO}	-5.0	V
※	Collector Current	DC	I_C	-30	A
		Peak		-50	A
※	Base Current	DC	I_B	-7.5	A
		Peak		-15	A
※	Collector Power Dissipation	Ta=25°C	P_C	5.0	W
		Derate above 25°C		28.6	mW/°C
		Tc=25°C	P_C	200	W
		Derate above 25°C		1.15	W/°C
※	Junction Temperature		T_j	200	°C
※	Storage Temperature Range		T_{stg}	-65 ~ 200	°C

ELECTRICAL CHARACTERISTICS ($Ta=25^{\circ}C$)

	CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
※	Collector Cut-off Current		I_{CBO}	V_{CB}=-60V, I_E=0	-	-	-1.0	mA
※	Collector Cut-off Current		I_{CEX}	V_{CE}=-60V, V_{BE}=1.5V	-	-	-5.0	mA
※	Collector Cut-off Current		I_{CEX}	V_{CE}=-30V, V_{BE}=1.5V, Tc=150°C	-	-	-10	mA
※	Collector Cut-off Current		I_{CEO}	V_{CE}=-60V, I_B=0	-	-	-5.0	mA
※	Emitter Cut-off Current		I_{EBO}	V_{EB}=-5V, I_C=0	-	-	-5.0	mA
※	Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$ ※※	I_C=-200mA, I_B=0	-60	-	-	V
※	DC Current Gain		hFE	V_{CE}=-2.0V, I_C=-1.0A	40	-	-	
				V_{CE}=-2.0V, I_C=-15A	15	-	60	
				V_{CE}=-4.0V, I_C=-30A	5.0	-	-	
※	Base-Emitter Voltage		V_{BE}	V_{CE}=-2.0V, I_C=-15A	-	-	-1.7	V
				V_{CE}=-4.0V, I_C=-30A	-	-	-3.0	V
※	Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=-10A, I_B=-1.0A	-	-	-0.75	V
				I_C=-15A, I_B=-1.5A	-	-	-1.0	V
				I_C=-20A, I_B=-2.0A	-	-	-2.0	V
				I_C=-30A, I_B=-6.0A	-	-	-4.0	V
※	Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C=-10A, I_B=-1.0A	-	-	-1.6	V
				I_C=-15A, I_B=-1.5A	-	-	-1.85	V
				I_C=-20A, I_B=-2.0A	-	-	-2.5	V
※	Transition Frequency		f_T	V_{CE}=-10V, I_C=-1.0A, f=1.0MHz	2.0	-	-	MHz
※	Small-Signal Current Gain		h_{fe}	V_{CE}=-10V, I_C=-1.0A, f=1.0kHz	40	-	-	
※	Switching Time	Rise Time	t_r	See Fig. 1-1	-	-	0.4	μs
		Storage Time	t_{stg}	See Fig.1-2	-	-	1.5	μs
		Fall Time	t_f		-	-	0.6	μs

※InAccodance with JEDEC Registration Data.

※※The sustaining voltage $V_{CEO(SUS)}$ MUST NOT be measured on a curve tracer.

Fig. 1 SWITCHING TIME EQUIVALENT TEST CIRCUITS

Fig. 1-1 TURN-ON TIME

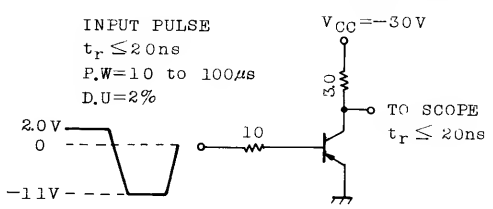
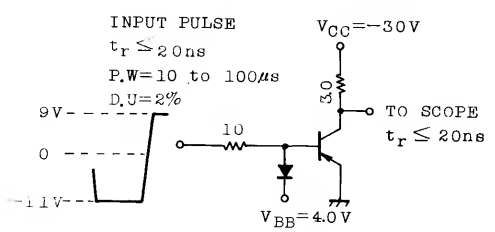
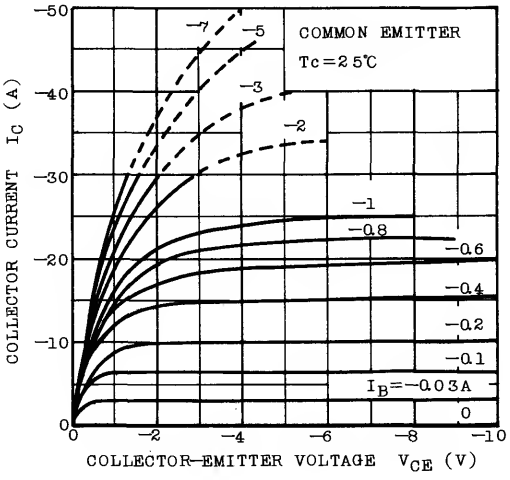


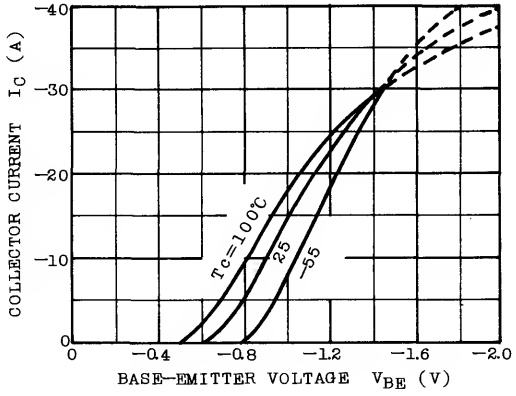
Fig. 1-2 TURN-OFF TIME



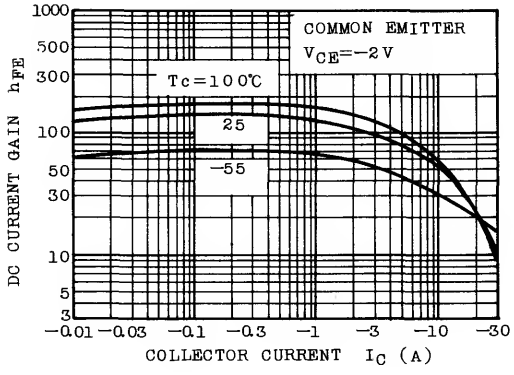
$I_C - V_{CE}$



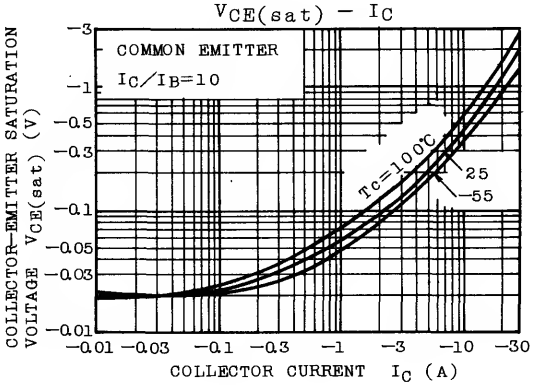
$I_C - V_{BE}$



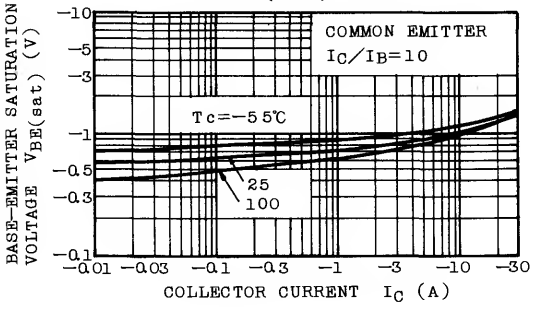
$h_{FE} - I_C$



$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



$P_C - T_c$