SILICON NPN TRIPLE DIFFUSED TYPE

2N5301

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

$V_{CE(sat)}$=3.0V (Max.) @ I_C=30A, I_B=6A

. Low Saturation Voltage:

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

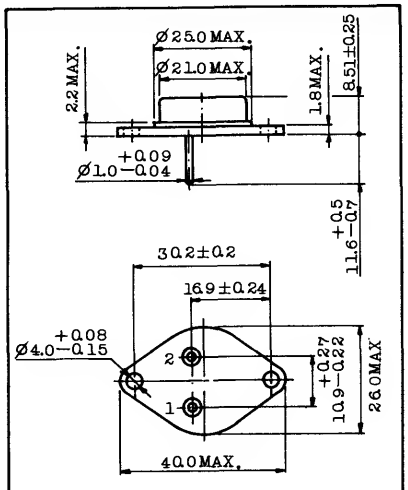
$V_{BE(sat)}$=1.7V (Max.) @ I_C=10A, I_B=1.0A

. High Collector Power Dissipation Capability:

P_C=200W (Max.)

. Complementary to 2N4398

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}	40	V
※	Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$	40	V
※	Emitter-Base Voltage		V_{EBO}	5	V
※	Collector Current	DC	I_C	30	A
		Peak	I_{CM}	50	A
※	Base Current		I_B	7.5	A
※	Collector Power Dissipation (Tc=25°C)		P_C	200	W
	Derate above 25°C			1.14	W/°C
※	Junction Temperature		T_j	200	°C
※	Storage Temperature Range		T_{stg}	-65 ~ 200	°C

※ In Accordance with JEDEC Registration Data format JS-6 RDF-2.

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

	CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
※	Collector Cut-off Current		I_{CBO}	V_{CB}=40V, I_E=0	-	-	1.0	mA
※	Collector Cut-off Current		I_{CEX}	V_{CE}=40V, V_{BE}=-1.5V	-	-	1.0	mA
※	Collector Cut-off Current		I_{CEX}	V_{CE}=40V, V_{BE}=-1.5V, Tc=150°C	-	-	10	mA
※	Collector Cut-off Current		I_{CEO}	V_{CE}=40V, 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	40	-	-	V
※	DC Current Gain		h_{FE}	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=20A, I_B=2.0A	-	-	2.0	V
				I_C=30A, I_B=6.0A	-	-	3.0	V
※	Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C=10A, I_B=1.0A	-	-	1.7	V
				I_C=15A, I_B=1.5A	-	-	1.8	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	-	-	1.0	μs
		Storage Time	t_{stg}	See Fig.1-2	-	-	2.0	μs
		Fall Time	t_f		-	-	1.0	μs

※In Accordance with JEDEC Registration Data Format JS-6 RDF-1.
※※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

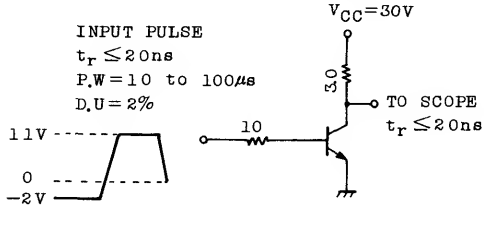
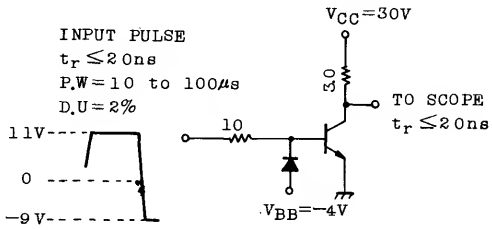
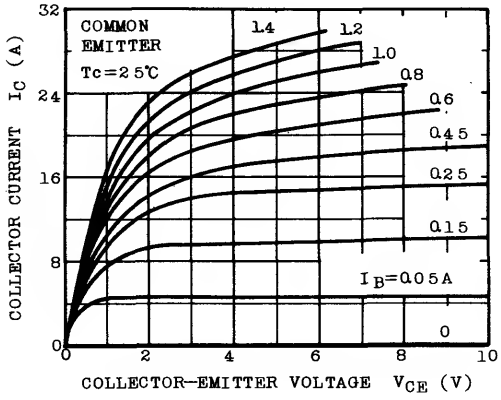


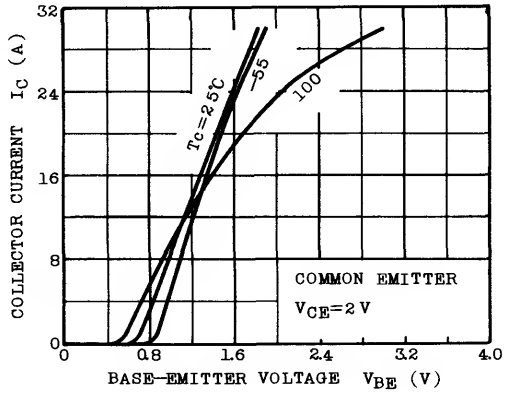
Fig.1-2 TURN-OFF TIME



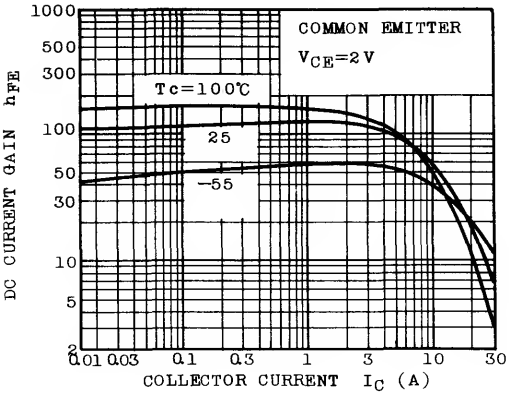
$I_C - V_{CE}$



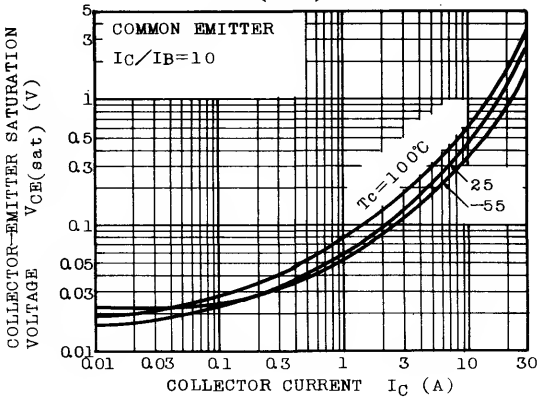
$I_C - V_{BE}$



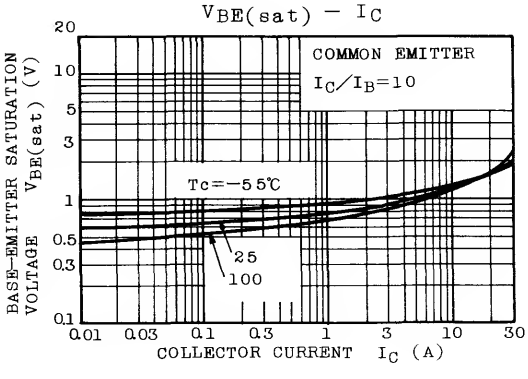
$h_{FE} - I_C$



$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



$P_C - T_C$