

TOSHIBA FIELD EFFECT TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS) (DARLINGTON)

# 2SD1784

MICRO MOTOR DRIVE, HAMMER DRIVE APPLICATIONS.  
SWITCHING APPLICATIONS.  
POWER AMPLIFIER APPLICATIONS.

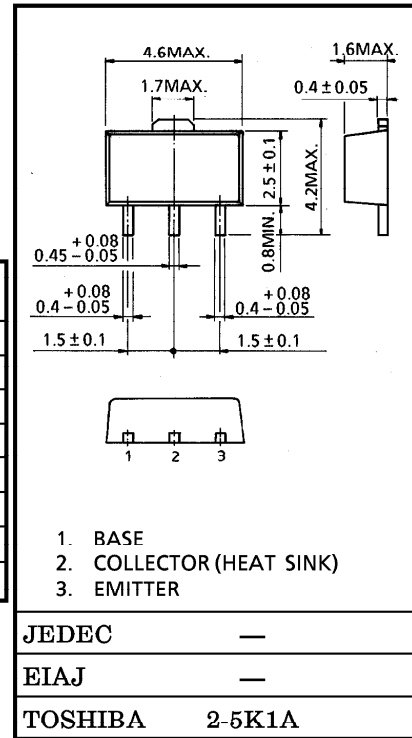
Unit in mm

- High DC Current Gain :  $h_{FE} = 4000$  (Min.)  
( $V_{CE} = 2V, I_C = 150mA$ )
- Low Saturation Voltage :  $V_{CE(sat)} = 1.5V$  (Max.)  
( $I_C = 1A, I_B = 1mA$ )

**MAXIMUM RATINGS**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	30	V
Collector-Emitter Voltage	$V_{CEO}$	30	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	$I_C$	1.5	A
Base Current	$I_B$	50	mA
Collector Power Dissipation	$P_C^*$	1000	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C

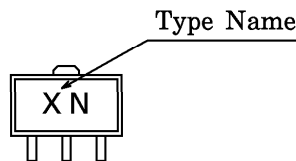
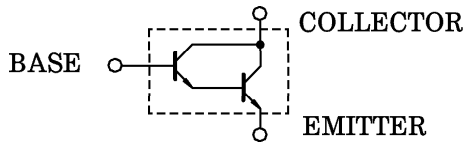
$P_C^*$  : 2SD1784 mounted on ceramic substrate  
(250mm<sup>2</sup> × 0.8t)



Weight : 0.05g

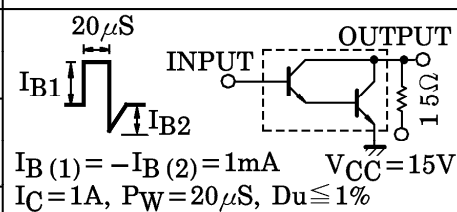
**EQUIVALENT CIRCUIT**

**Marking**



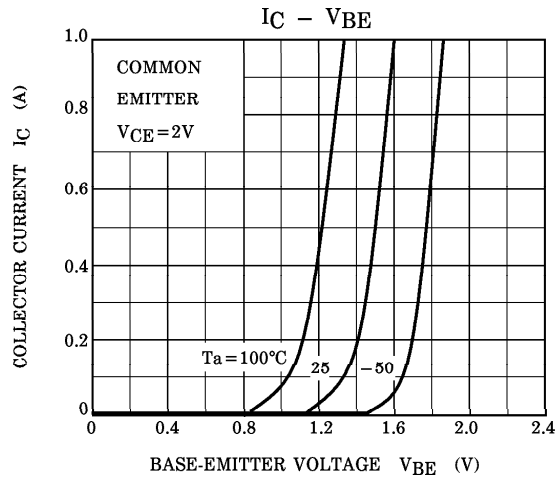
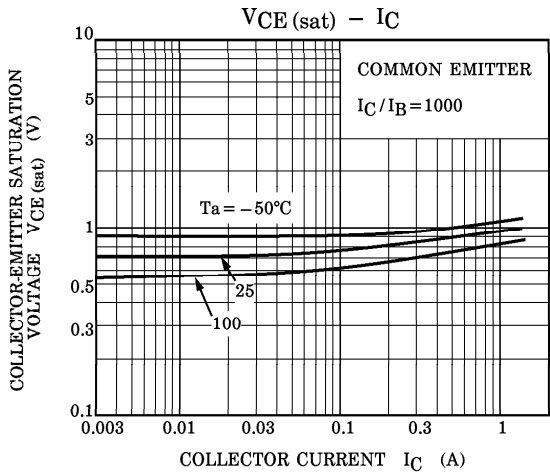
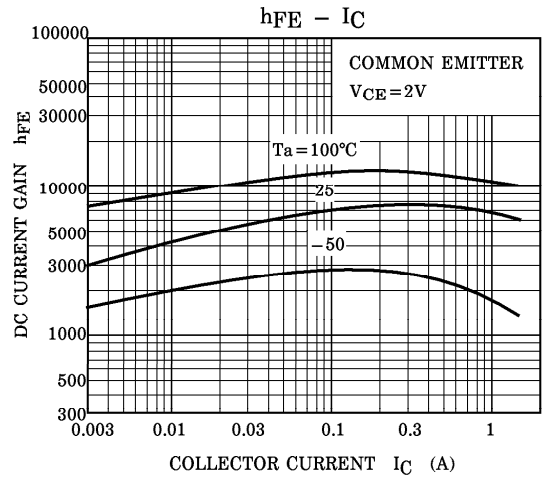
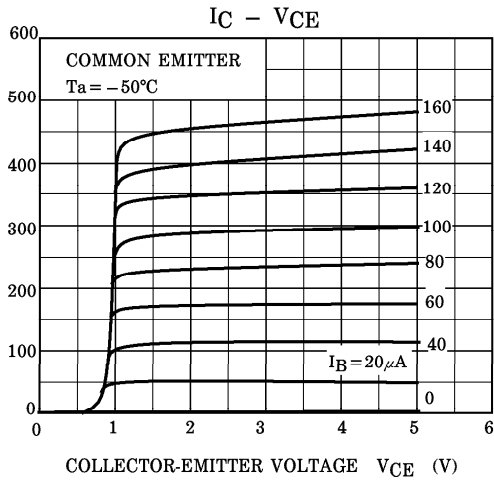
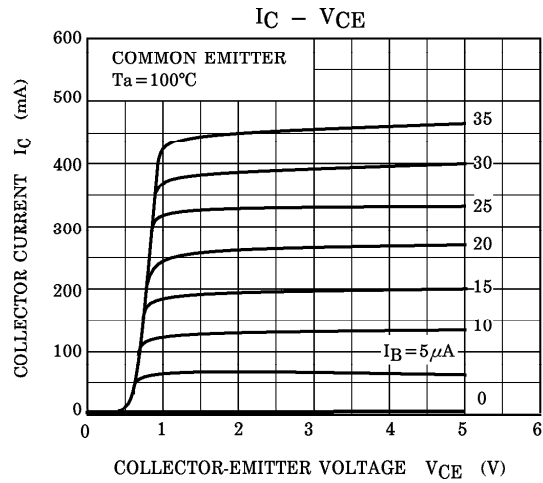
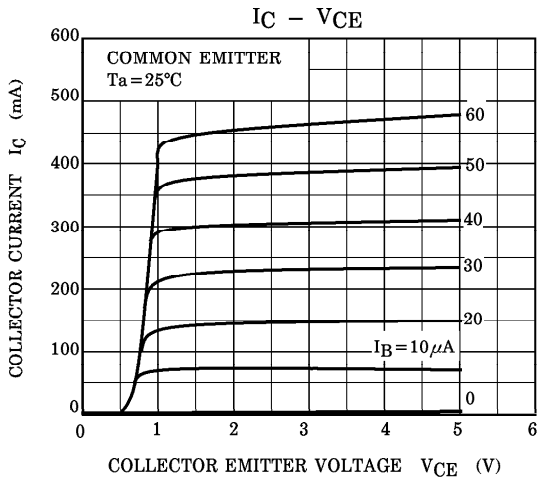
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$	—	—	10	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 10V, I_C = 0$	—	—	10	$\mu A$
Collector-Emitter Breakdown Voltage	$V(BR)_{CEO}$	$I_C = 10mA, I_B = 0$	30	—	—	V
DC Current Gain	$h_{FE}$	$V_{CE} = 2V, I_C = 150mA$	4000	—	—	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1A, I_B = 1mA$	—	—	1.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1A, I_B = 1mA$	—	—	2.2	V
Switching Time	Turn-on Time	$t_{on}$	—	0.20	—	$\mu S$
	Storage Time	$t_{stg}$	—	0.6	—	
	Fall Time	$t_f$	—	0.3	—	



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