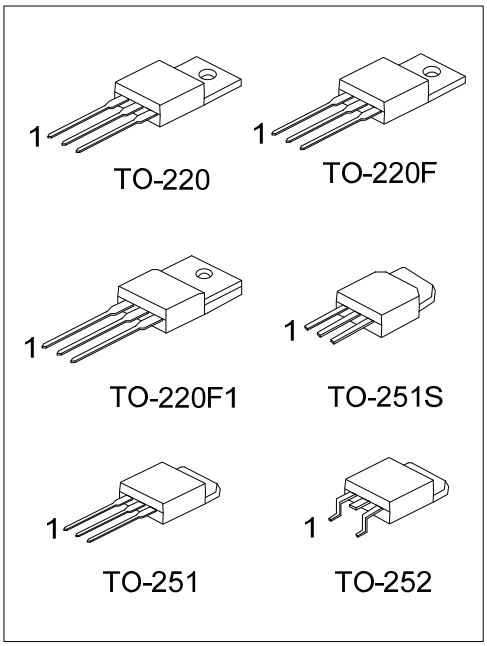
2SD1816

NPN PLANAR TRANSISTOR

HIGH CURRENT SWITCHING APPLICATIONS



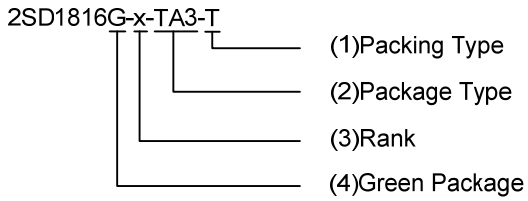
■ FEATURES

* Low collector-to-emitter saturation voltage
* Good linearity of h_{FE}
* Small and slim package facilitating compactness of sets.
* High f_T
* Fast switching speed

■ ORDERING INFORMATION

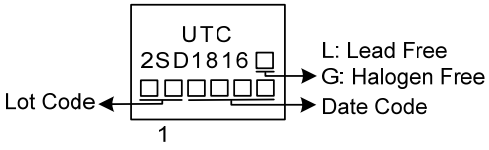
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2SD1816L-x-TA3-T	2SD1816G-x-TA3-T	TO-220	B	C	E	Tube
2SD1816L-x-TF1-T	2SD1816G-x-TF1-T	TO-220F1	B	C	E	Tube
2SD1816L-x-TF3-T	2SD1816G-x-TF3-T	TO-220F	B	C	E	Tube
2SD1816L-x-TM3-T	2SD1816G-x-TM3-T	TO-251	B	C	E	Tube
2SD1816L-x-TMS-T	2SD1816G-x-TMS-T	TO-251S	B	C	E	Tube
2SD1816L-x-TN3-R	2SD1816G-x-TN3-R	TO-252	B	C	E	Tape Reel

Note: Pin assignment: B: Base C: Collector E: Emitter



(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TF1: TO-220F1, TF3: TO-220F, TM3: TO-251, TMS: TO-251S, TN3: TO-252
(3) x: refer to Classification of h_{FE1}
(4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Collector-Base Voltage			V_{CBO}	120	V
Collector-Emitter Voltage			V_{CEO}	100	V
Emitter-Base Voltage			V_{EBO}	6	V
Collector Current		DC	I_C	4	A
		PULSE(Note 2)		8	A
Collector Dissipation	T_A=25°C	TO-220/TO-220F TO-220F1	P_C	2	W
	T_C=25°C	TO-220		25	W
		TO-220F/TO-220F1		15	W
	T_A=25°C	TO-251/TO-251S		1	W
	T_C=25°C	TO-252		15	W
Junction Temperature			T_J	+150	°C
Storage Temperature			T_{STG}	-40 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Duty=1/2, Pw=20ms.

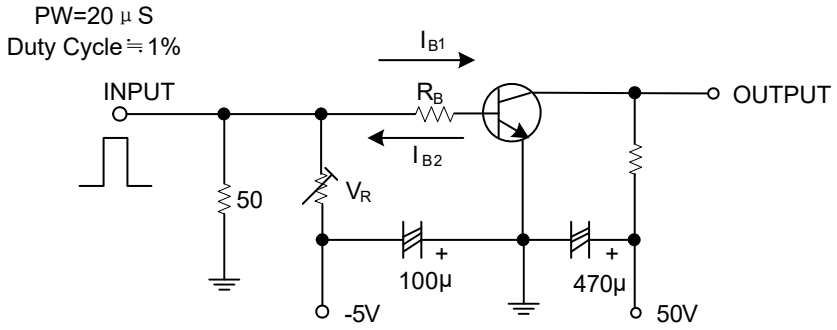
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Base Breakdown Voltage	BV_{CBO}	I_C =10μA, I_E =0	120			V
Collector Emitter Breakdown Voltage	BV_{CEO}	I_C =1mA, R_B=∞	100			V
Emitter Base Breakdown Voltage	BV_{EBO}	I_E =10μA, I_C=0	6			V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C = 2A, I_B =0.2A		0.9	1.2	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C = 2A, I_B=0.2A		150	400	mV
Collector Cut-Off Current	I_{CBO}	V_{CB} = 100 V, I_E =0			1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB} = 4V, I_C=0			1	μA
DC Current Transfer Ratio	h_{FE1}	V_{CE} = 5V, I_C = 0.5A	70		560	
	h_{FE2}	V_{CE} =5V, I_C = 3A	40			
Transition Frequency	f_T	V_{CE} =10V, I_C =0.5A		180		MHz
Output Capacitance	C_{ob}	V_{CB} =10V, I_E =0A, f =1MHz		40		pF
Turn-on Time	t_{ON}	See test circuit		100		ns
Storage Time	t_{STG}	See test circuit		900		ns
Fall Time	t_F	See test circuit		50		ns

■ CLASSIFICATION of h_{FE1}

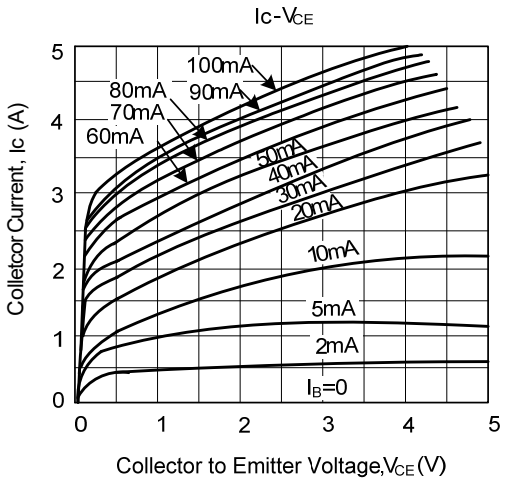
RANK	Q	R	S	T	H
RANGE	70 -140	100 - 200	140 - 280	200 - 400	270 - 560

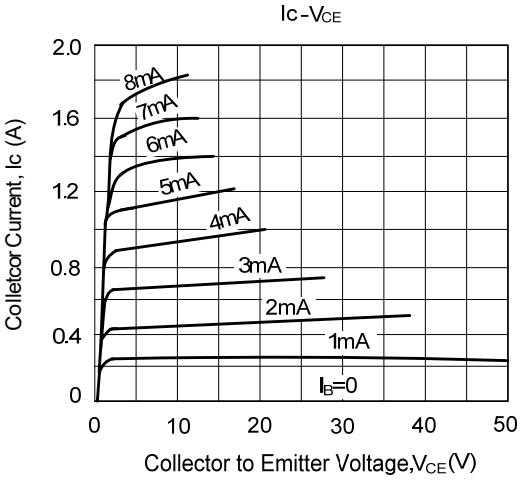
■ TEST CIRCUIT

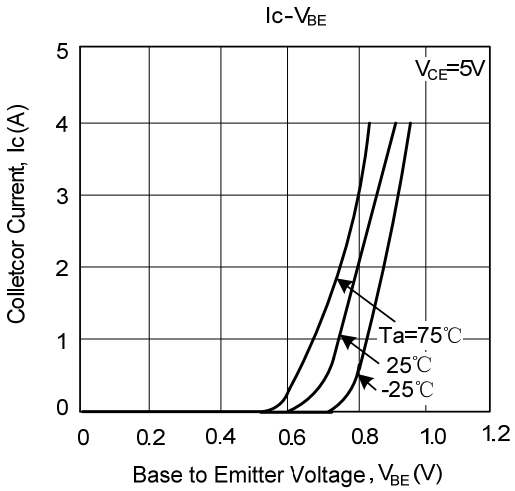


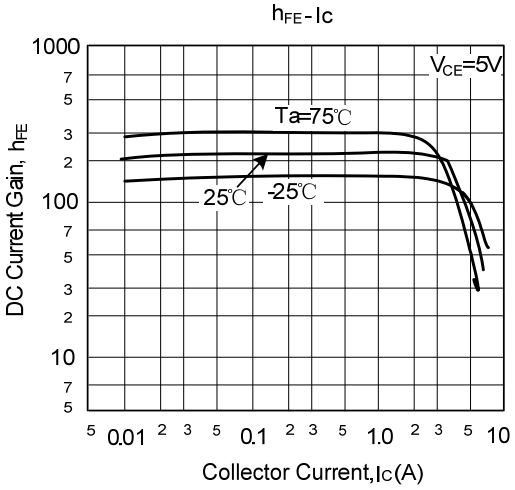
Ic=10, I_{B1}= -10, I_{B2}=2A
Unit (resistance: Ω , capacitance: F)

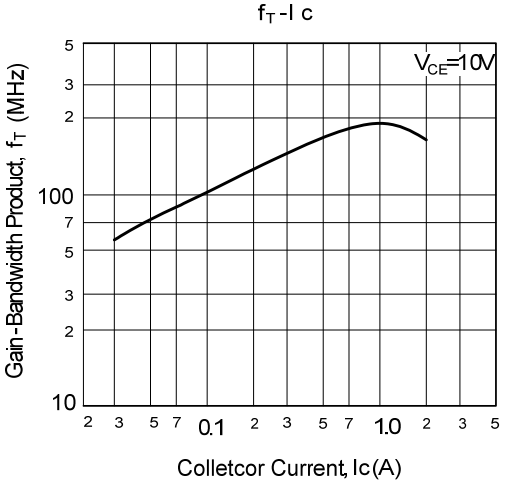
■ TYPICAL CHARACTERISTICS

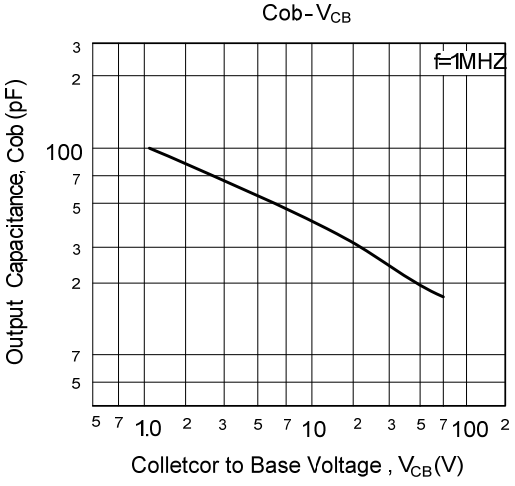






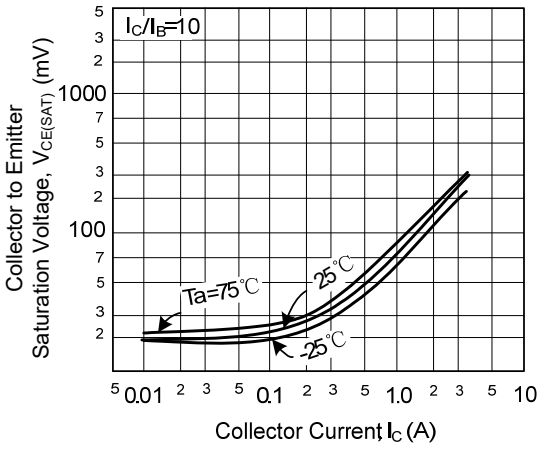




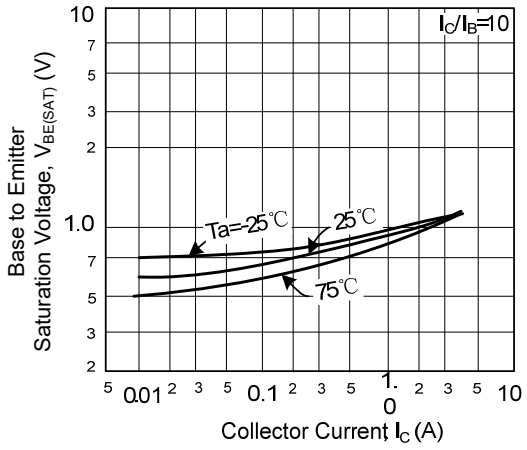


■ TYPICAL CHARACTERISTICS (Cont.)

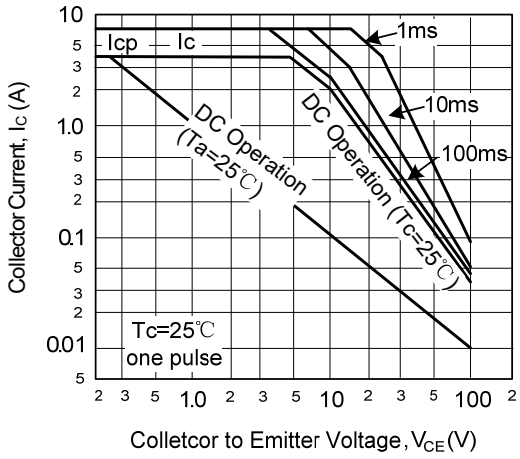
$V_{CE(SAT)}$ - Ic



$V_{CE(SAT)}$ - Ic



A S O



PD-Ta