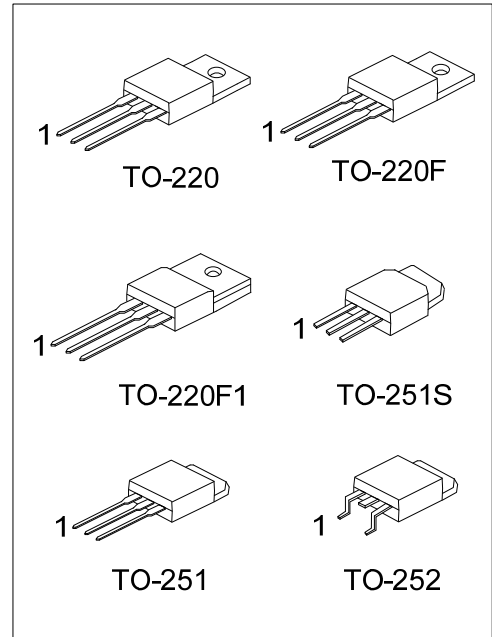


**2SD1816****NPN PLANAR TRANSISTOR****HIGH CURRENT SWITCHING APPLICATIONS****■ FEATURES**

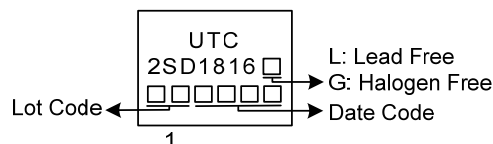
- * Low collector-to-emitter saturation voltage
- * Good linearity of h_{FE}
- * Small and slim package facilitating compactness of sets.
- * High f_T
- * Fast switching speed

**■ 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) Packing Type
	(2) Package Type
	(3) Rank
	(4) Green Package
(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** ($T_A=25^\circ\text{C}$, 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, $P_w=20\text{ms}$.

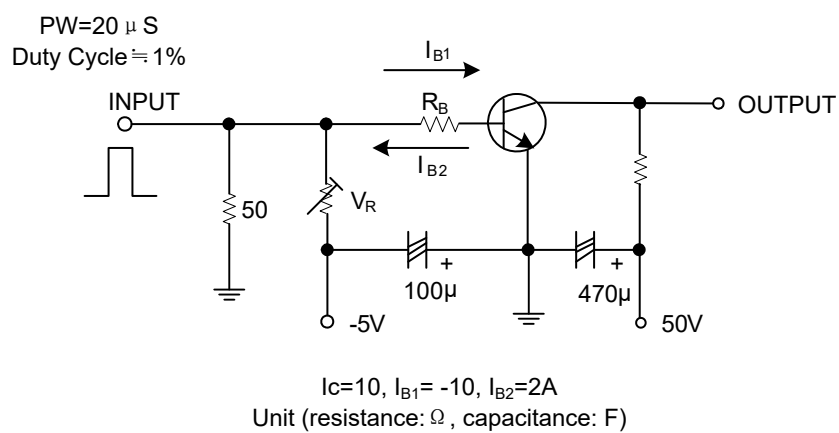
■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=10\mu\text{A}$, $I_E=0$	120			V
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$, $R_B=\infty$	100			V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu\text{A}$, $I_C=0$	6			V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=2\text{A}$, $I_B=0.2\text{A}$		0.9	1.2	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=2\text{A}$, $I_B=0.2\text{A}$		150	400	mV
Collector Cut-Off Current	I_{CBO}	$V_{CB}=100\text{V}$, $I_E=0$			1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=4\text{V}$, $I_C=0$			1	μA
DC Current Transfer Ratio	h_{FE1}	$V_{CE}=5\text{V}$, $I_C=0.5\text{A}$	70		560	
	h_{FE2}	$V_{CE}=5\text{V}$, $I_C=3\text{A}$	40			
Transition Frequency	f_T	$V_{CE}=10\text{V}$, $I_C=0.5\text{A}$		180		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}$, $I_E=0\text{A}$, $f=1\text{MHz}$		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

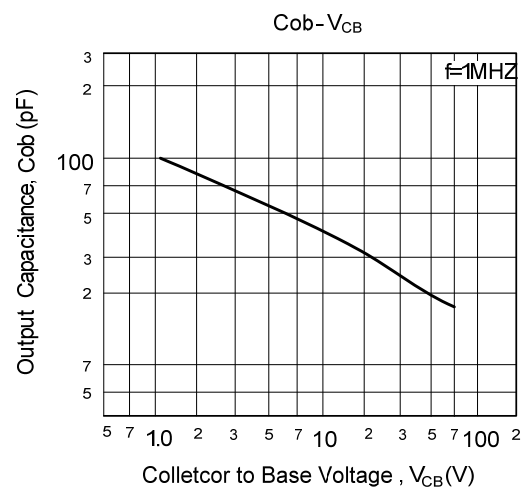
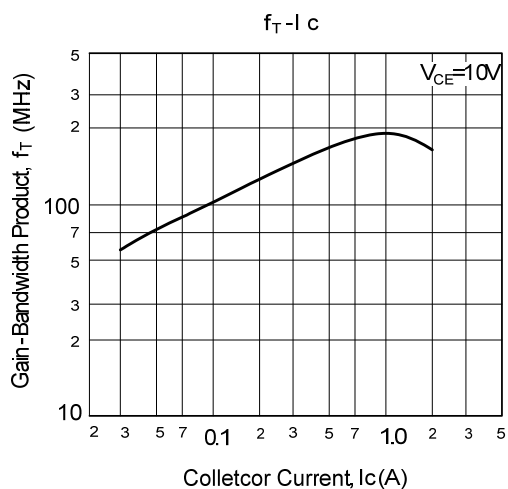
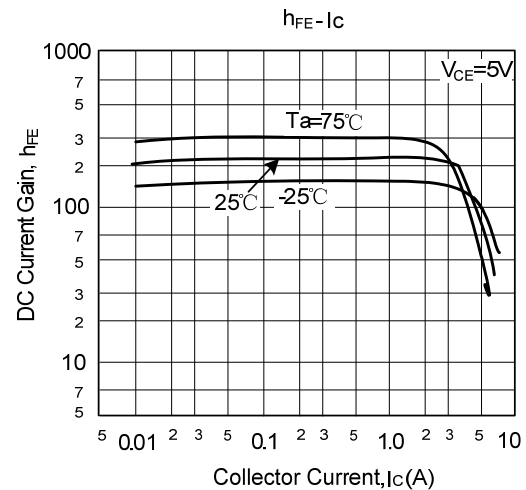
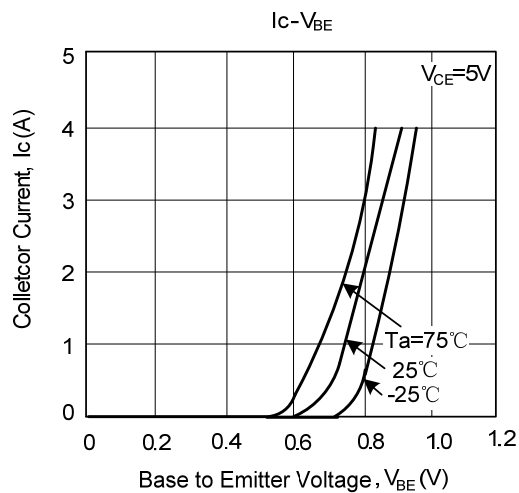
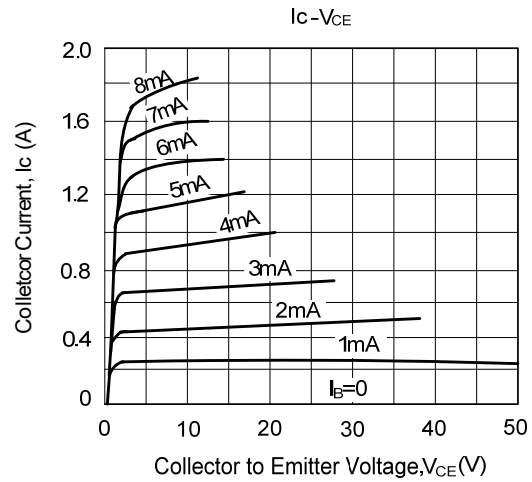
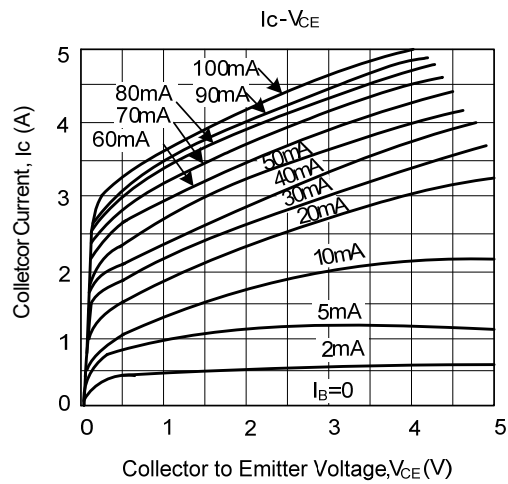
■ **CLASSIFICATION of h_{FE1}**

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

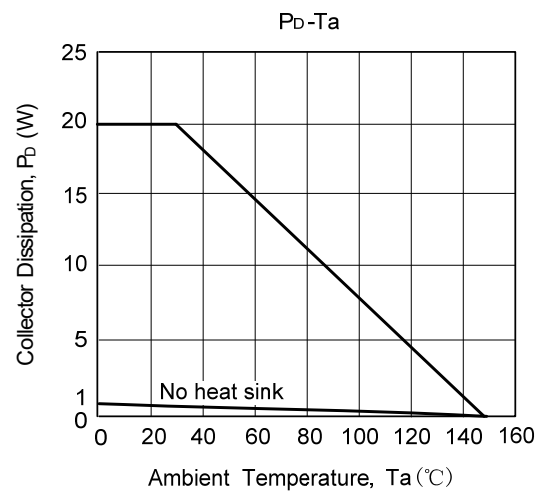
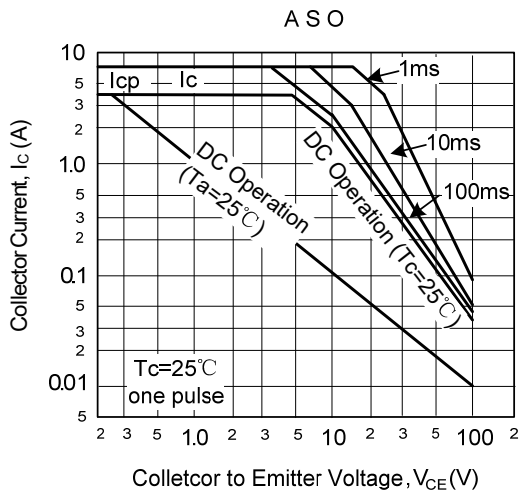
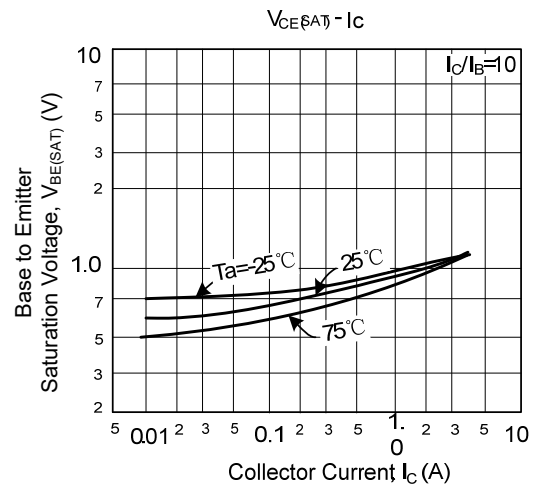
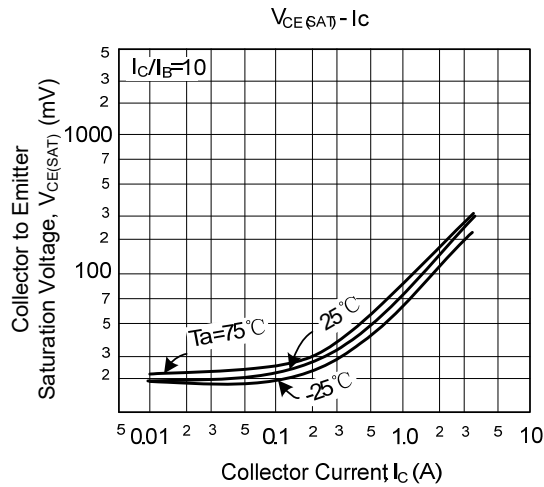
■ TEST CIRCUIT



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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