

Maximum Ratings $T_j = 25$ unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-Emitter Breakdown Voltage	V_{CE}	650	V
DC collector current, limited by T_{jmax} $T_C = 25^\circ C$ $T_C = 100^\circ C$	I_C	100 50	A
Diode Forward current, limited by T_{jmax} $T_C = 25^\circ C$ $T_C = 100^\circ C$	I_F	100 50	A
Continuous Gate-emitter voltage	V_{GE}	20	V
Transient Gate-emitter voltage	V_{GE}	30	V
Turn off safe operating area $V_{CE} = 650V$, $T_j = 150^\circ C$, $t_p = 1 \mu s$	-	150	A
Pulse collector current, $V_{GE} = 15V$, t_p limited by T_{jmax}	I_{CM}	150	A
Short Circuit Withstand Time, $V_{GE} = 15V$, V_{CE}	T_{sc}	5	

 Power dissipation, $T_j = 25^\circ C$
 $P_{TOT} = 14.2W$

Electrical Characteristics $T_j = 25$ unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static						
Collector-Emitter Breakdown Voltage	BV_{CES}	$V_{GE}=0V, I_C=250\mu A$	650		-	V
		$V_{GE}=0V, I_C=1mA$	650			V
Gate Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=250\mu A$	4.0	5.0	6.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_C=50A$	-	1.8	2.3	V
		$T_j = 25^\circ C$ $T_j = 150^\circ C$	-	2.1		V
Zero gate voltage collector current	I_{CES}	$V_{CE} = 650V, V_{GE} = 0V$ $T_j = 25^\circ C$ $T_j = 150^\circ C$		0.1	40 1000	A
Gate-emitter leakage current	I_{GES}	$V_{CE} = 0V, V_{GE} = 20V$			100	nA
Transconductance	gfs	$V_{CE} = 20V, I_C = 50A$	-	30	-	S

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Dynamic						
Input capacitance	C_{ies}	$V_{CE} = 30V, V_{GE} = 0V,$ $f = 1MHz$		2800		pF
Output capacitance	C_{oes}			130		
Reverse transfer capacitance	C_{res}			75		
Gate charge	Q_G	$V_{CC} = 520V, I_C = 50A,$ $V_{GE} = 15V$	-	180	-	nC
Short circuit collector current	$I_{C\ sc}$	$V_{GE}=15V, t_{sc} \leq 5\mu s$ $V_{CC}=400V,$ $T_{j, start}=25^\circ C$	-	310	-	

Switching Characteristic, Inductive Load

Parameter

Symbol

Fig. 1 FBSOA characteristics

Fig. 2 Load Current vs. Frequency

Fig. 3 Power dissipation as a function of T_C

Fig. 4 collector current as a function of T_C

Fig. 5 Output characteristics

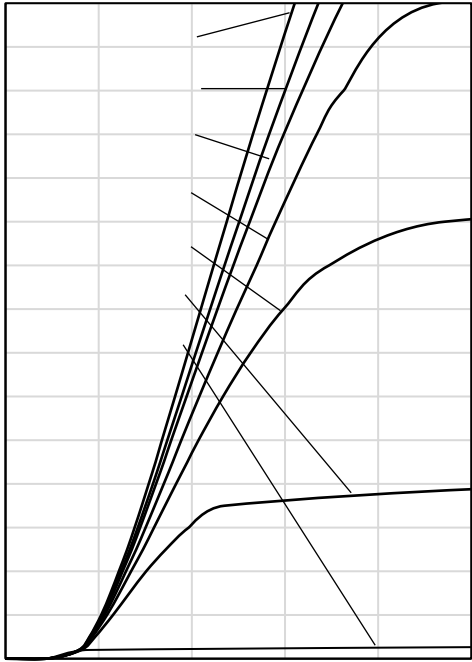


Fig. 6 Saturation voltage characteristics

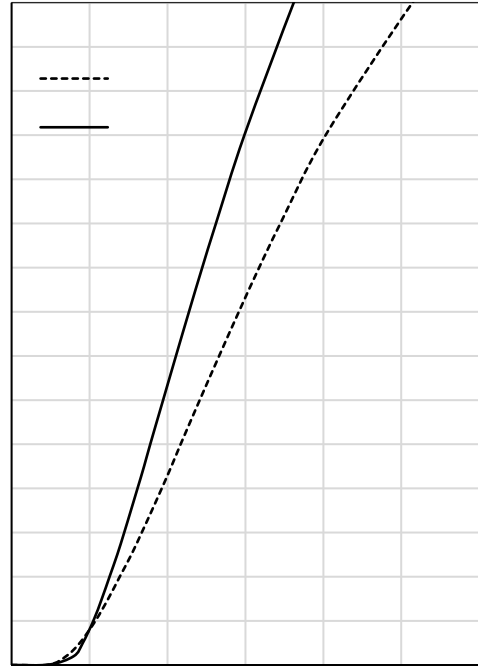


Fig. 7 Switching times vs. gate resistor

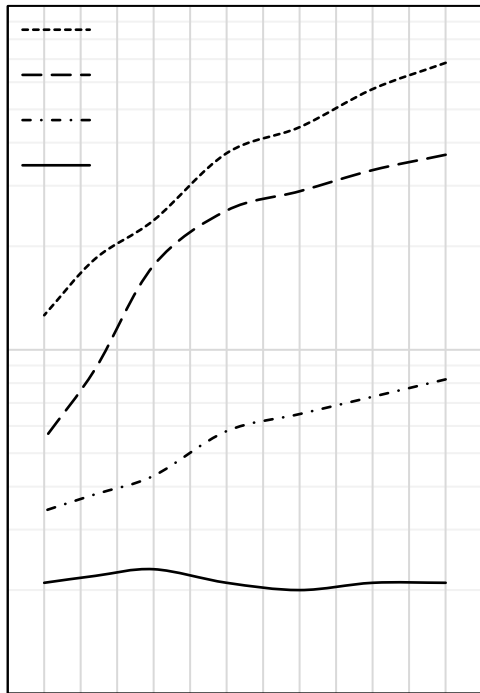


Fig. 8 Switching times vs. collector current

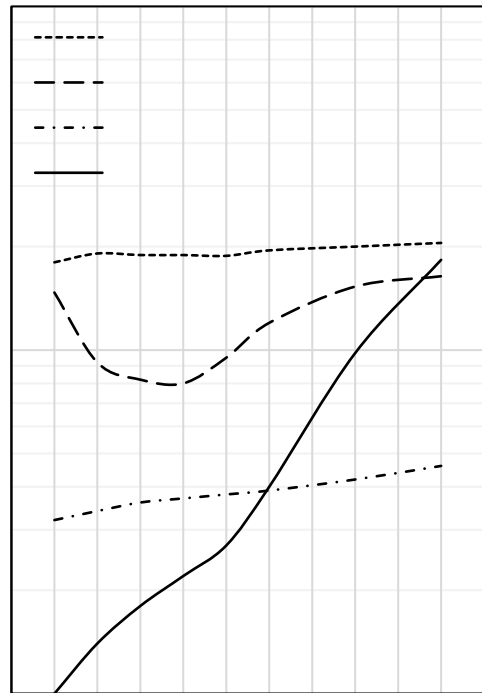


Fig. 9 Switching loss vs. gate resistor

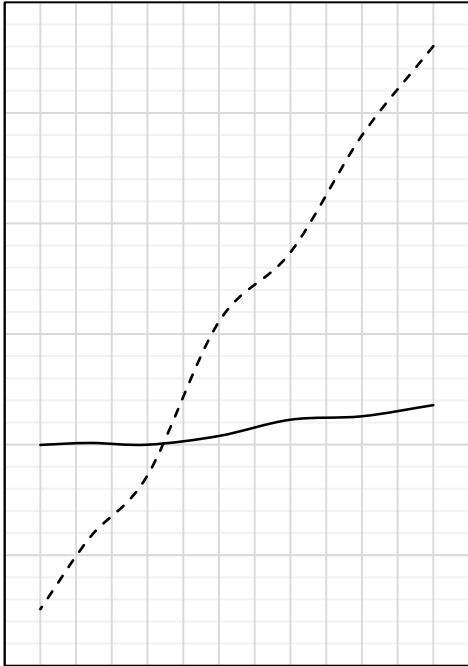
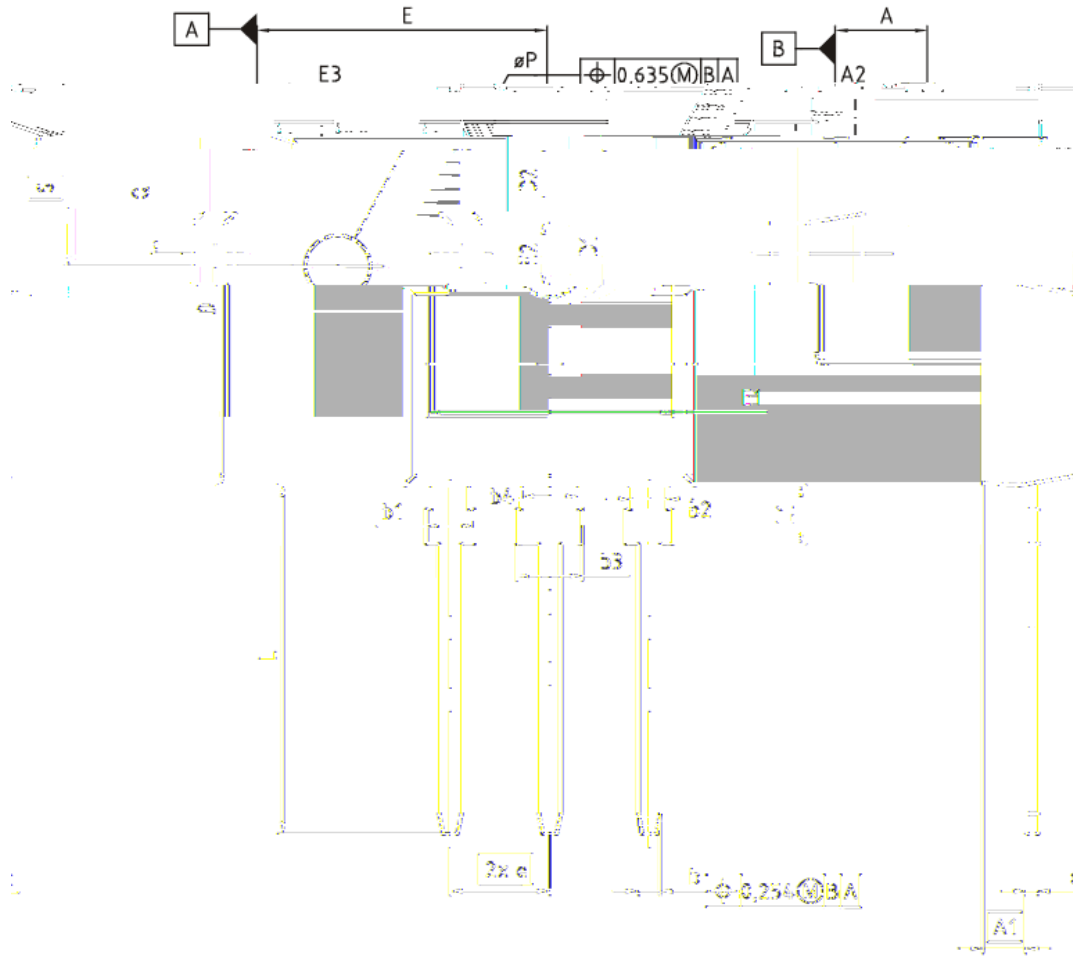


Fig. 10 Switching loss vs. collector current

Fig. 11 Gate charge characteristics

Fig. 12 Capacitance characteristics

PG-TO247-3



DIM		MILLIMETERS		INCHES	
MAX		MIN		MAX	MIN
0.205	A	4.83	5.73	0.193	0.225
	A1	2.27	2.54	0.089	0.100
	A2	1.185	2.16	0.073	0.085
	b	1.07	1.33	0.042	0.052
	b1	1.90	2.41	0.075	0.095
	b2	1.90	2.16	0.075	0.085
0.193	b3	2.27	3.38	0.089	0.133
	b4	2.57	3.18	0.113	0.125
0.205	c	0.56	0.80	0.022	0.031
1.27	D	20.60	21.70	0.811	0.854
0.093	D1	0.93	1.63	0.037	0.064
0.053	D2	0.95	1.35	0.037	0.053
0.635	F	1.570	1.613	0.062	0.063
0.557	E1	13.10	14.15	0.516	0.554
0.201	E2	3.68	5.10	0.145	0.201
0.102	E3	1.00	2.60	0.039	0.102
0.214 (BSC)	G	5.44 (BSC)			
3	N	3			
80	L	19.80	20.32	0.780	0.800
61	L1	4.10	4.47	0.161	0.176
38	øP	3.50	3.70	0.138	0.146
16	Q	5.49	6.00	0.216	0.236
38	S	6.04	6.30	0.238	0.248