

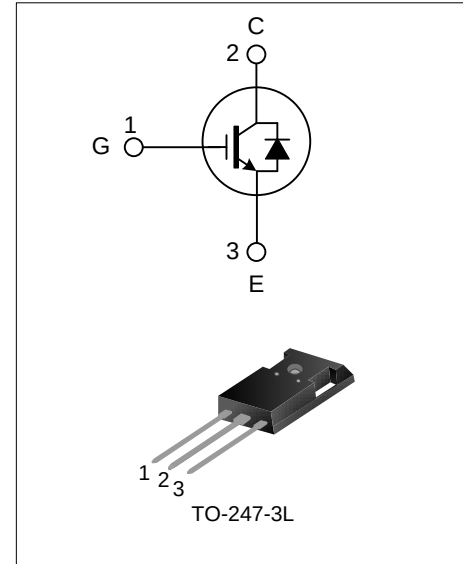
30A, 600V FIELD STOP IGBT

DESCRIPTION

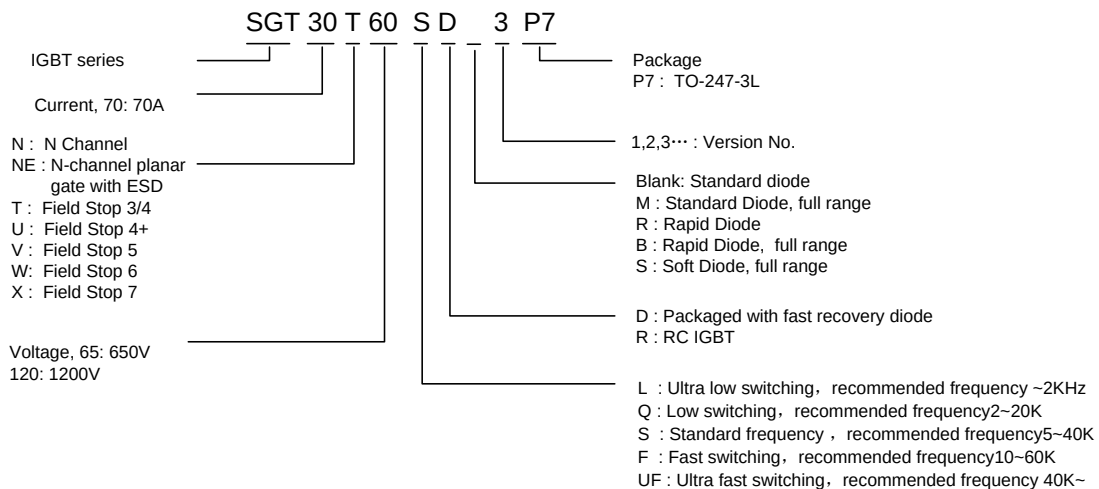
SGT30T60SD3P7 adopts Field Stop III IGBT technology, offer the optimum performance for induction Heating, UPS, SMPS and PFC application.

FEATURES

- 30A, 600V, $V_{CE(sat)}(typ.)=1.65V@I_C=30A$
- Low conduction loss
- Fast switching
- High input impedance



NOMENCLATURE



ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing Type
SGT30T60SD3P7	TO-247-3L	30T60SD3	Pb free	Tube

ABSOLUTE MAXIMUM RATINGS (T_C=25°C UNLESS OTHERWISE NOTED)

Characteristics		Symbol	Ratings	Units
Collector to Emitter Voltage		V _{CE}	600	V
Gate to Emitter Voltage		V _{GE}	±20	V
Collector Current	T _C =25°C	I _C	60	A
	T _C =100°C		30	
Pulsed Collector Current		I _{CM}	120	A
Diode Current		I _F	12	A
Maximum Power Dissipation(T _C =25°C)		P _D	230	W
Operating Junction Temperature		T _J	-55~+150	°C
Storage Temperature Range		T _{stg}	-55~+150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Ratings	Units
Thermal Resistance, Junction to Case(IGBT)	R _{θJC}	0.54	°C/W
Thermal Resistance, Junction to Case(FRD)	R _{θJC}	1.5	°C/W

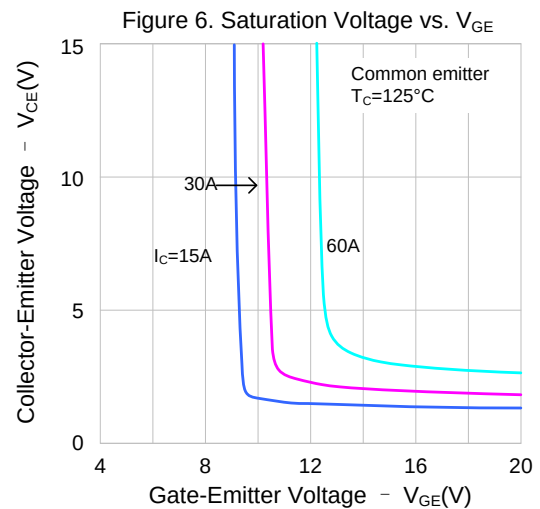
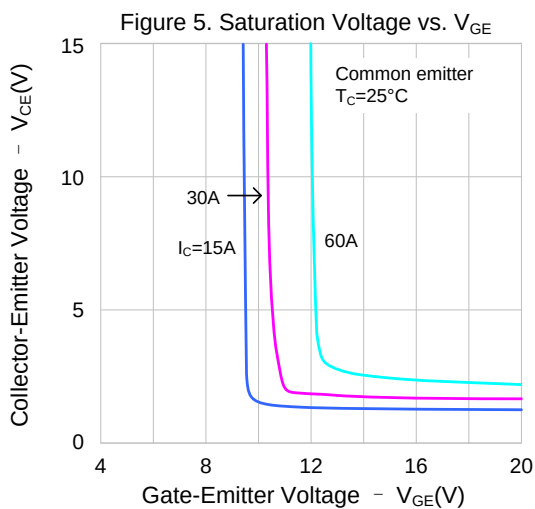
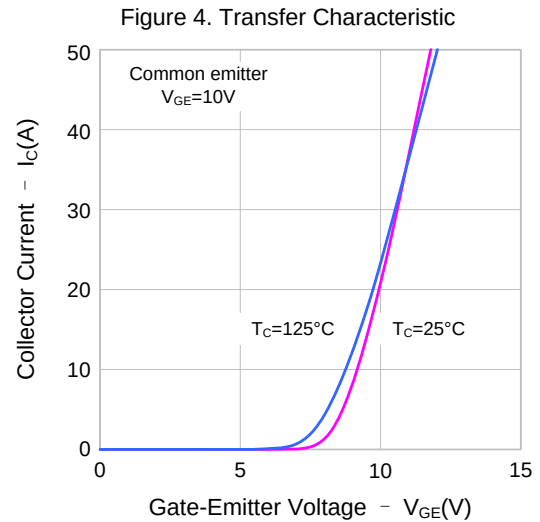
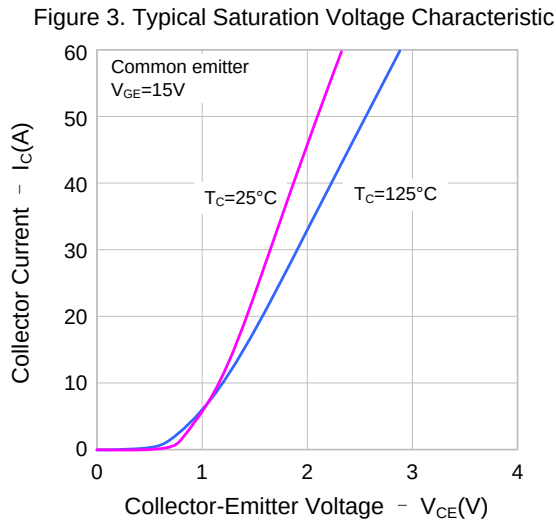
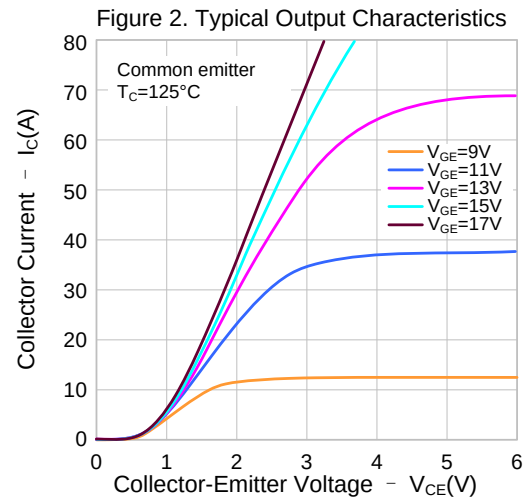
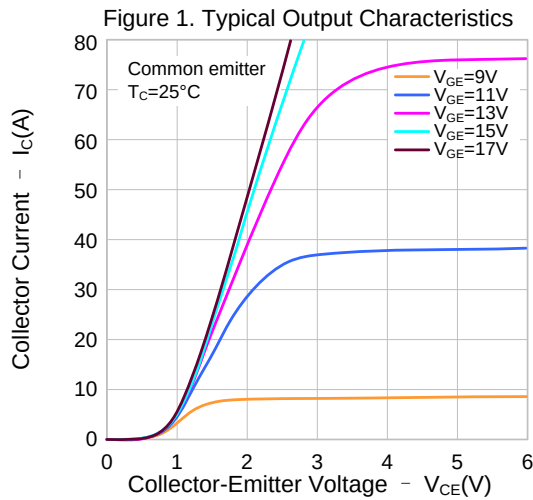
ELECTRICAL CHARACTERISTICS OF IGBT (T_C=25°C, UNLESS OTHERWISE NOTED)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Units
Collector to Emitter Breakdown Voltage	BV _{CE}	V _{GE} =0V, I _C =250μA	600	--	--	V
C-E Leakage Current	I _{CES}	V _{CE} =600V, V _{GE} =0V	--	--	200	μA
G-E Leakage Current	I _{GES}	V _{GE} =20V, V _{CE} =0V	--	--	±400	nA
G-E Threshold Voltage	V _{GE(th)}	I _C =250μA, V _{CE} =V _{GE}	4.0	5.0	6.5	V
Collector to Emitter Saturation Voltage	V _{CE(sat)}	I _C =30A, V _{GE} =15V, T _C =25°C	--	1.65	2	V
		I _C =30A, V _{GE} =15V, T _C =125°C	--	1.9	--	V
Input Capacitance	C _{ies}	V _{CE} =30V	--	1780	--	pF
Output Capacitance	C _{oes}	V _{GE} =0V	--	100	--	
Reverse Transfer Capacitance	C _{res}	f=1MHz	--	32	--	
Turn-On Delay Time	T _{d(on)}	V _{CE} =400V I _C =30A R _g =10Ω V _{GE} =15V Inductive load	--	30	--	ns
Rise Time	T _r		--	105	--	
Turn-Off Delay Time	T _{d(off)}		--	67	--	
Fall Time	T _f		--	100	--	
Turn-On Switching Loss	E _{on}	Inductive load	--	1.85	--	mJ
Turn-Off Switching Loss	E _{off}		--	0.45	--	
Total Switching Loss	E _{st}		--	2.3	--	
Total Gate Charge	Q _g	V _{CE} =400V, I _C =30A, V _{GE} =15V	--	76	--	nC
Gate to Emitter Charge	Q _{ge}		--	20	--	
Gate to Collector Charge	Q _{gc}		--	38	--	

ELECTRICAL CHARACTERISTICS OF FRD (T_C = 25°C UNLESS OTHERWISE NOTED)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Units
Diode Forward Voltage	V _{FM}	I _F =12A, T _C =25°C	--	1.8	--	V
		I _F =12A, T _C =125°C	--	1.4	--	
Diode Reverse Recovery Time	T _{rr}	I _{EC} =12A, dI _{EC} /dt=200A/μs	--	28	--	ns
Diode Reverse Recovery Charge	Q _{rr}	I _{EC} =12A, dI _{EC} /dt=200A/μs	--	55	--	nC

TYPICAL CHARACTERISTICS CURVE



TYPICAL CHARACTERISTICS CURVE (CONTINUED)

Figure 7. Saturation Voltage Drop vs. Temperature

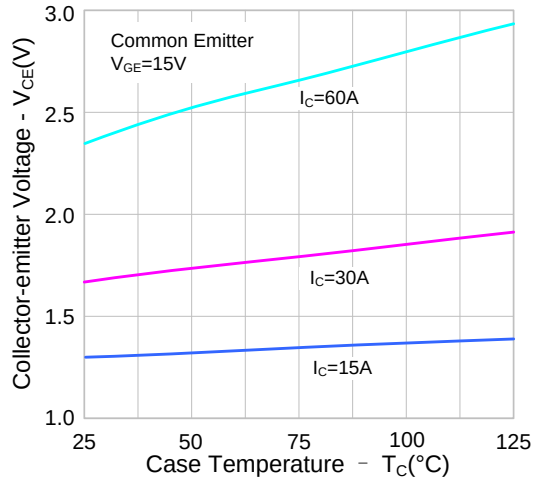


Figure 8. Capacitance Characteristic

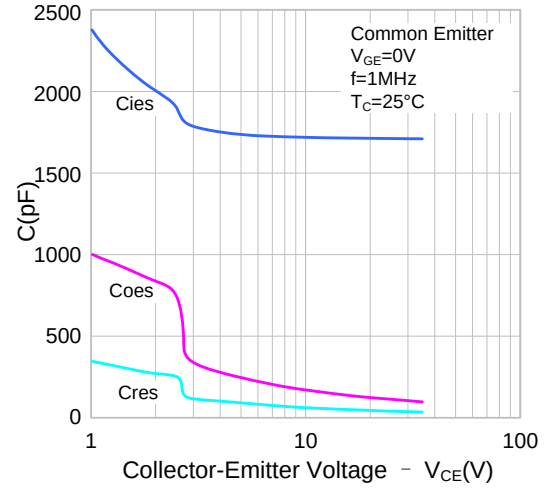


Figure 9. Gate Charge Characteristic

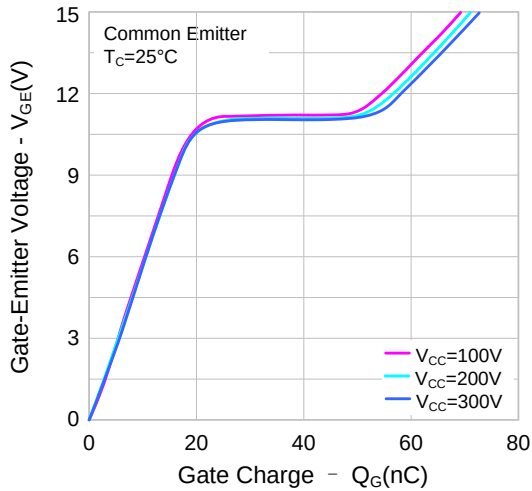


Figure 10. Turn-on Characteristic vs. Gate Resistance

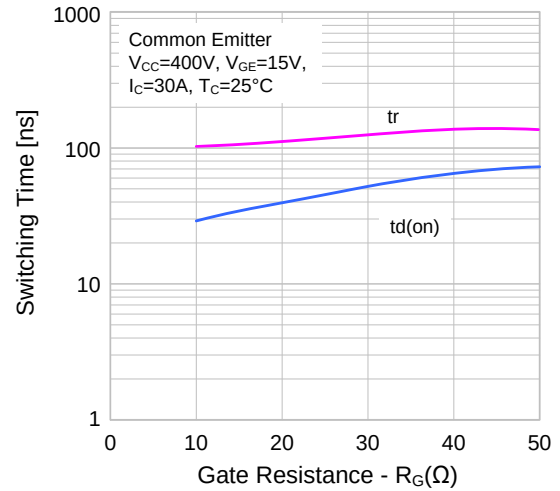


Figure 11. Turn-off Characteristic vs. Gate Resistance

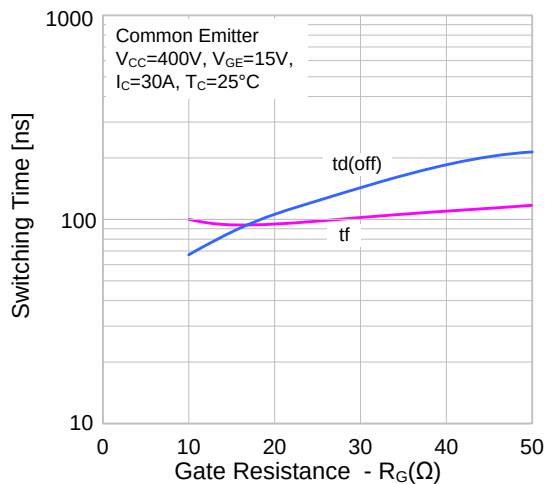
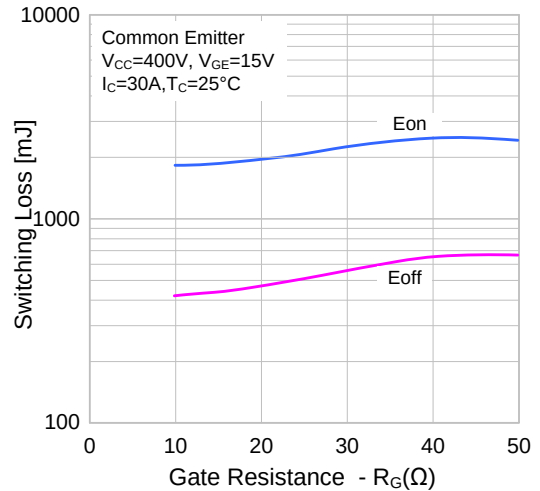


Figure 12. Switching Loss vs. Gate Resistance



TYPICAL CHARACTERISTICS CURVE (CONTINUED)

Figure 13. Turn-on Characteristic vs. Collector Current

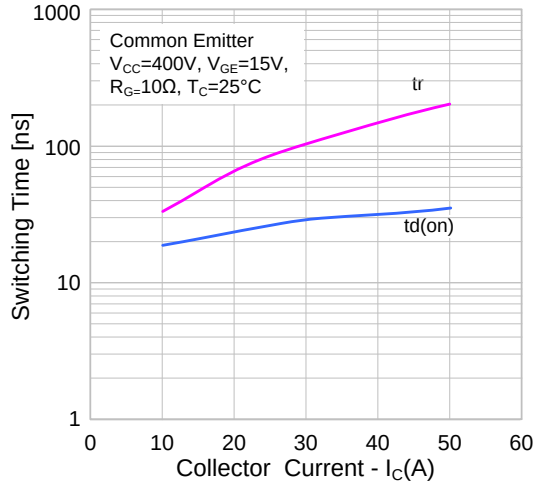


Figure 14. Turn-off Characteristic vs. Collector Current

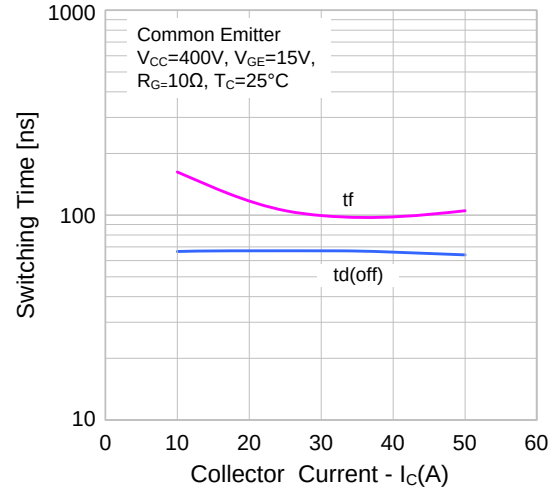


Figure 15. Switching Loss vs. Collector Current

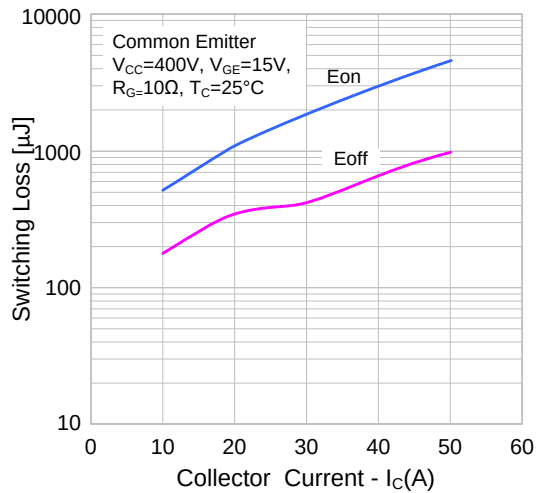


Figure 16. Forward Characteristic

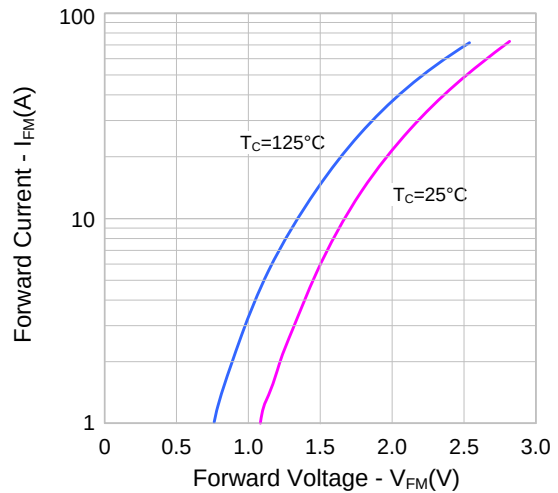


Figure 17. Reverse Recovery Time vs. Forward Current

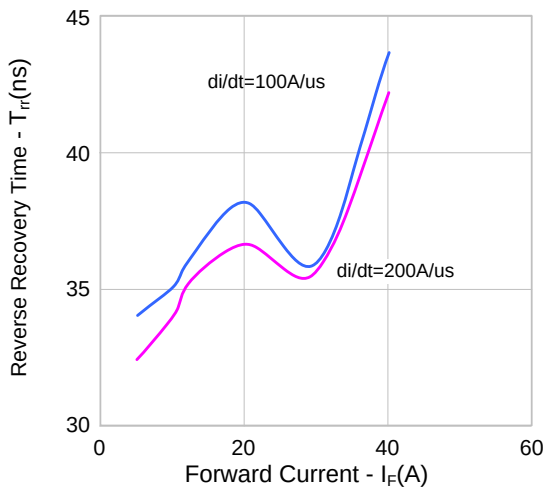
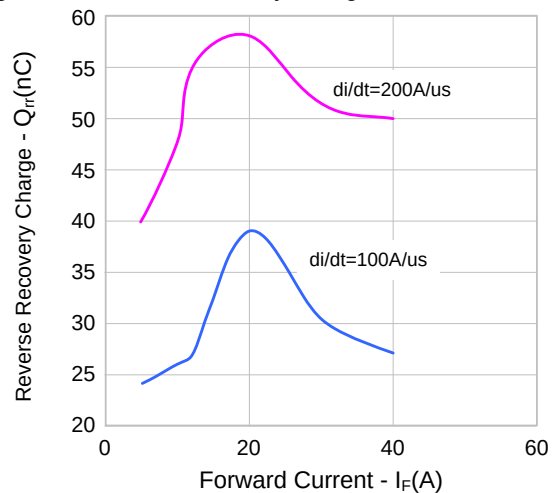
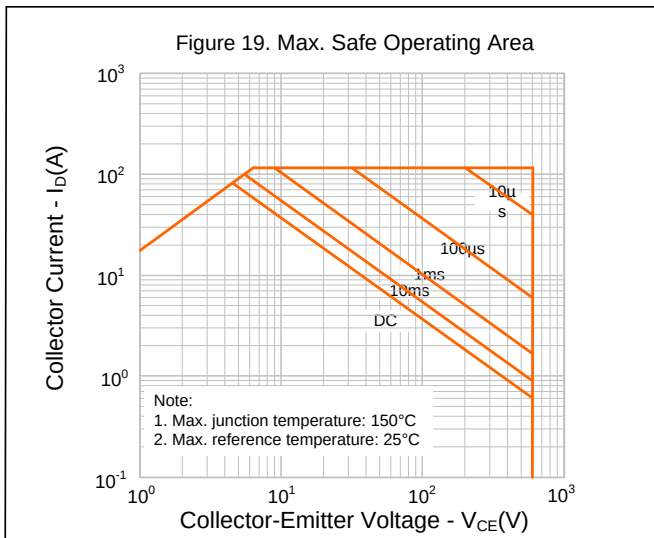


Figure 18. Reverse Recovery Charge vs. Forward Current



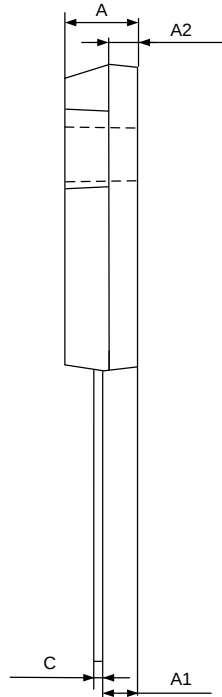
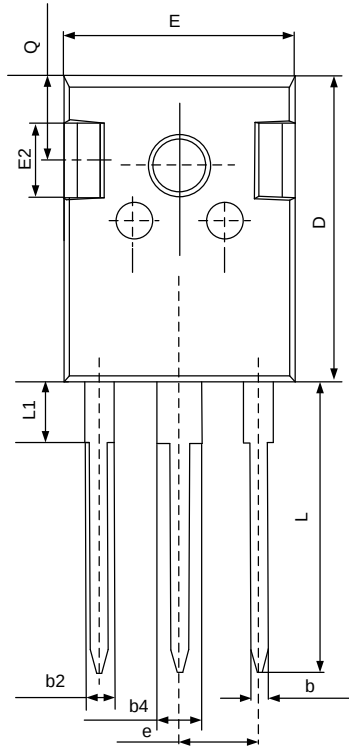
TYPICAL CHARACTERISTICS CURVE (CONTINUED)



PACKAGE OUTLINE

TO-247-3L

Unit: mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	—	1.36
b2	1.91	—	2.25
b4	2.91	—	3.25
c	0.51	—	0.75
D	20.80	21.00	21.30
E	15.50	15.80	16.10
E2	4.40	5.00	5.20
e	5.44 BSC		
L	19.72	19.92	20.22
L1	—	—	4.30
Q	5.60	5.80	6.00

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Rev.: 1.1

Revision History:

1. Update Ratings of I_{CM}
2. Update the template of datasheet

Rev.: 1.0

Revision History:

1. First release