

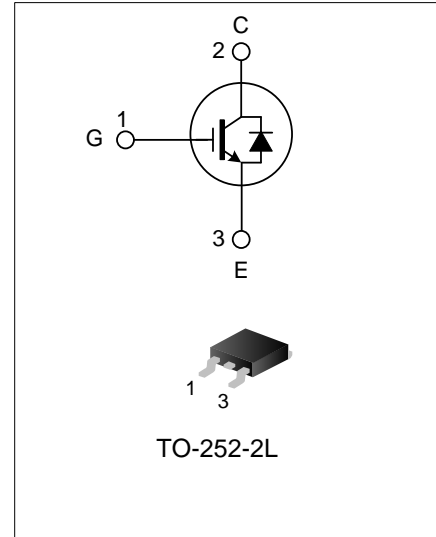
10A, 600V FIELD STOP IGBT

DESCRIPTION

The SGT10U60SDM2D field stop IGBT adopts Silan Field Stop IV+ technology, features low conduction loss and switching loss, is applicable to UPS, SMPS, motor application and PFC fields.

FEATURES

- ◆ 10A, 600V, $V_{CE(sat)(typ.)}=1.65V@I_C=10A$
- ◆ Low conduction loss
- ◆ Fast switching
- ◆ High input impedance



NOMENCLATURE

	SGT 10 U 60 S D M 2 D	
IGBT series	SGT	Package
Current, 10: 10A	10	D: TO-252-3L
N : N Channel	U	1,2,3... : Version No.
NE : N-channel planar gate with ESD	60	Blank: Standard diode
T : Field Stop 3/4	S	M : Standard Diode, full range
U : Field Stop 4+	D	R : Rapid Diode
V : Field Stop 5	M	B : Rapid Diode, full range
W: Field Stop 6	2	S : Soft Diode, full range
X : Field Stop 7	D	D : Packaged with fast recovery diode
Voltage, 65: 650V		R : RC IGBT
120: 1200V		L : Ultra low saturation voltage, $f<2KHz$
		Q : Low saturation voltage, $f=2\sim 20KHz$
		S : Standard, $f=5\sim 40KHz$
		F : Fast switching, $f=10\sim 60KHz$
		UF : Ultra fast switching, $f>40KHz$

ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing Type
SGT10U60SDM2DTR	TO-252-2L	10U60SD2	Halogen free	Tape & reel

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

Parameter		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	20	A
	T _C =100°C		10	
Pulsed Collector Current		I _{CM}	30	A
Diode current	T _C =25°C	I _F	20	A
	T _C =100°C		10	
Pulsed Diode Current		I _{FM}	30	A
Power Dissipation (T _C =25°C)		P _D	48	W
Operating Junction Temperature		T _J	-55~+150	°C
Storage Temperature Range		T _{stg}	-55~+150	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction to Case (IGBT)	R _{θJC}	--	--	--	2.6	°C/W
Thermal Resistance, Junction to Case (FRD)	R _{θJC}	--	--	--	3.6	°C/W
Thermal Resistance, Junction to Ambient (IGBT)	R _{θJA}	--	--	--	72	°C/W
Soldering Temperature(SMD)	T _{solid}	Reflow soldering: 10±1 sec, 3times	--	--	260	°C

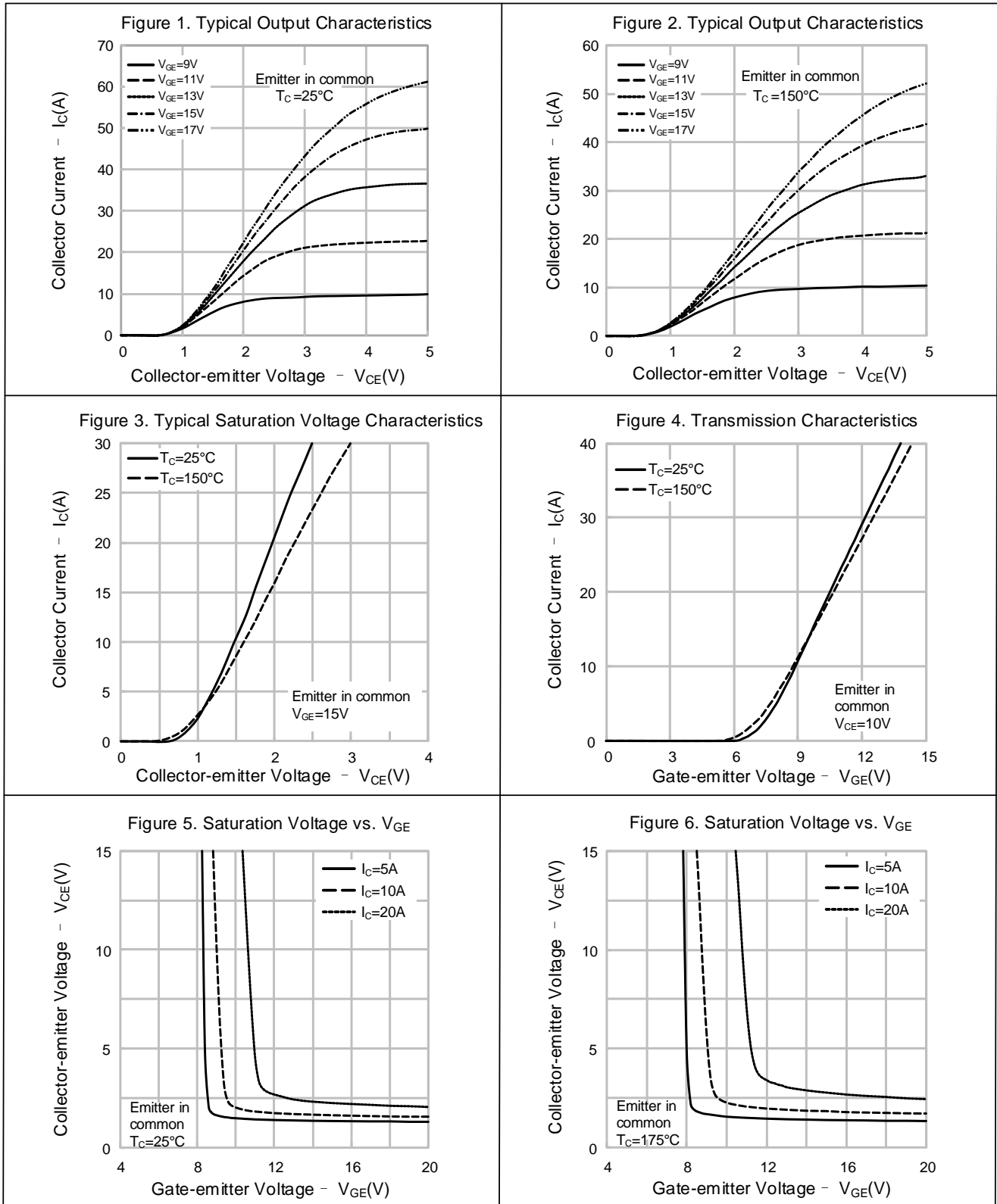
ELECTRICAL CHARACTERISTICS OF IGBT (T_C=25°C, UNLESS OTHERWISE NOTED)

Parameter	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}	3.5	5.5	6.5	V
Collector to Emitter Saturation Voltage	V _{CE(sat)}	I _C =10A, V _{GE} =15V	--	1.65	2.2	V
		I _C =10A, V _{GE} =15V, T _C =150°C	--	1.85	--	V
Input Capacitance	C _{ies}	V _{CE} =30V	--	853	--	pF
Output Capacitance	C _{oes}	V _{GE} =0V	--	22	--	
Reverse Transfer Capacitance	C _{res}	f=1MHz	--	10	--	
Turn-On Delay Time	T _{d(on)}	V _{CE} =400V I _C =10A R _g =10Ω V _{GE} =15V Inductive load T _C =25°C	--	10	--	ns
Rise Time	T _r		--	18	--	
Turn-Off Delay Time	T _{d(off)}		--	50	--	
Fall Time	T _f		--	100	--	
Turn-On Switching Loss	E _{on}	Inductive load T _C =25°C	--	0.44	--	mJ
Turn-Off Switching Loss	E _{off}		--	0.13	--	
Total Switching Loss	E _{st}		--	0.57	--	
Turn-On Delay Time	T _{d(on)}	V _{CE} =400V I _C =5.0A R _g =10Ω V _{GE} =15V Inductive load T _C =25°C	--	8.0	--	ns
Rise Time	T _r		--	8.0	--	
Turn-Off Delay Time	T _{d(off)}		--	44	--	
Fall Time	T _f		--	154	--	
Turn-On Switching Loss	E _{on}	Inductive load T _C =25°C	--	0.20	--	mJ
Turn-Off Switching Loss	E _{off}		--	0.05	--	
Total Switching Loss	E _{st}		--	0.25	--	
Total Gate Charge	Q _g	V _{CE} = 400V, I _C =10A, V _{GE} =15V	--	49	--	nC
Gate to Emitter Charge	Q _{ge}		--	9.0	--	
Gate to Collector Charge	Q _{gc}		--	23	--	

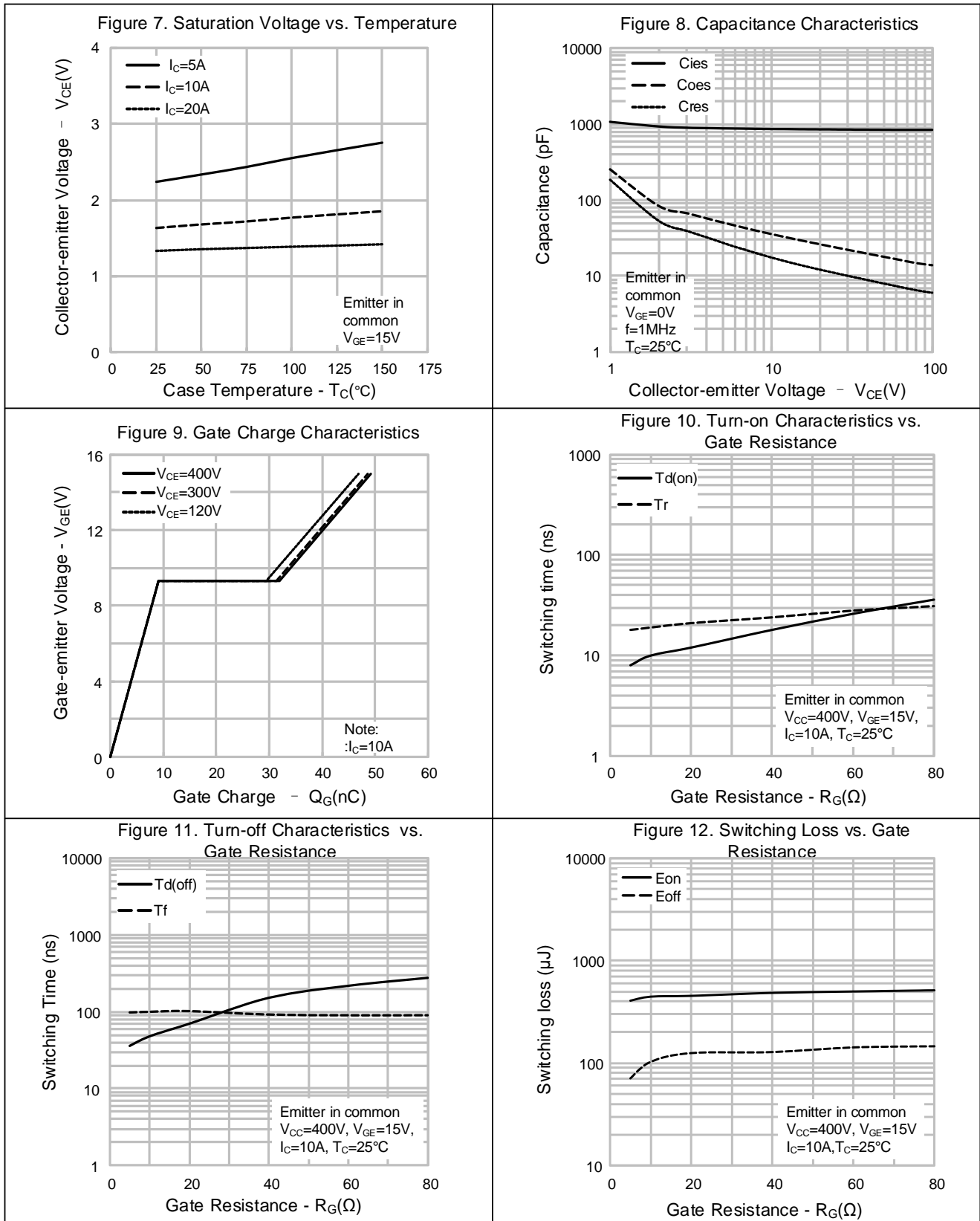
ELECTRICAL CHARACTERISTICS OF FRD (T_C=25°C, UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Units
Diode Forward Voltage	V _{FM}	I _F =10A, T _C =25°C	--	2.0	2.5	V
		I _F =10A, T _C =150°C	--	1.7	--	
Diode Reverse Recovery Time	T _{rr}	I _{ES} =10A, dI _{ES} /dt=200A/μs	--	22	--	ns
Diode Reverse Recovery Charge	Q _{rr}		--	42	--	nC

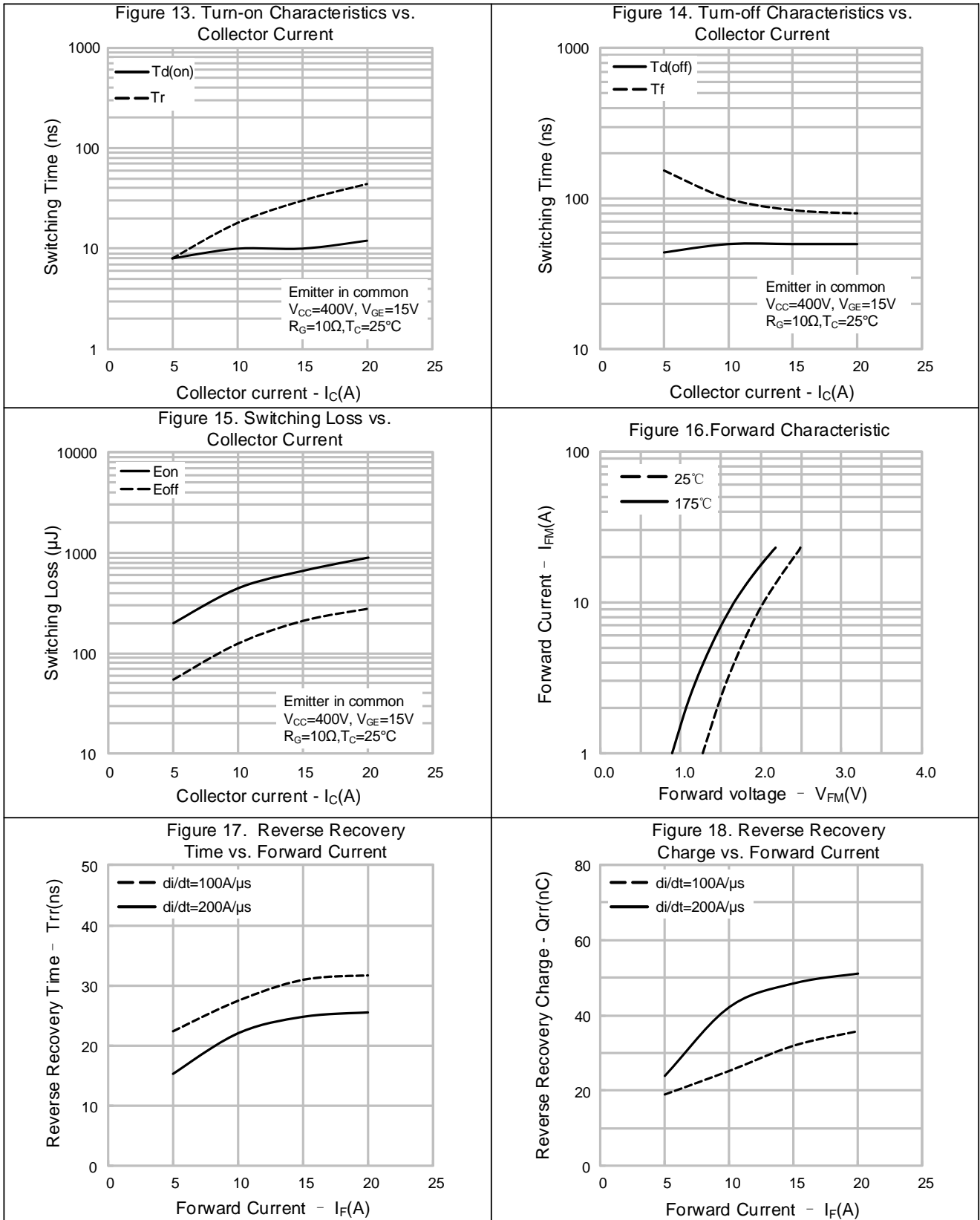
TYPICAL CHARACTERISTICS CURVE



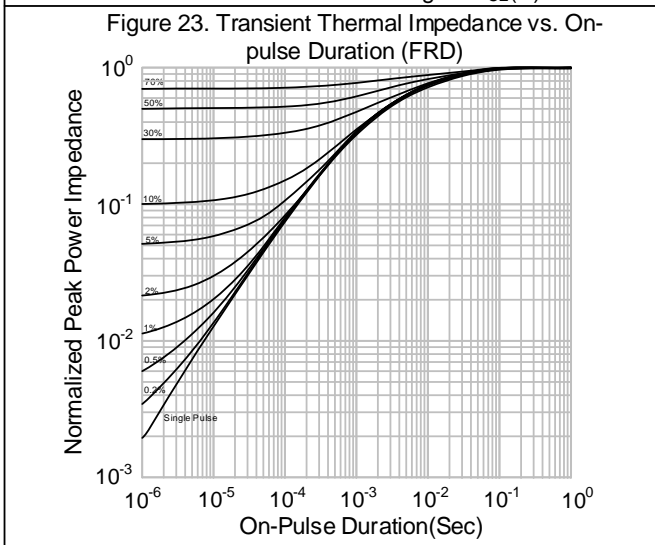
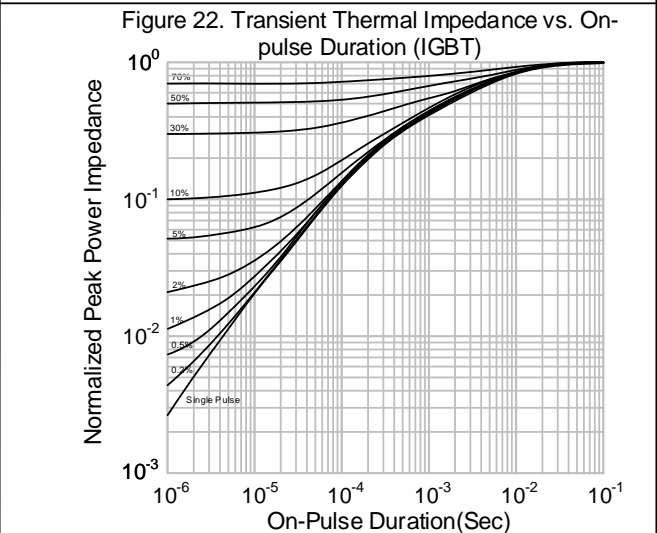
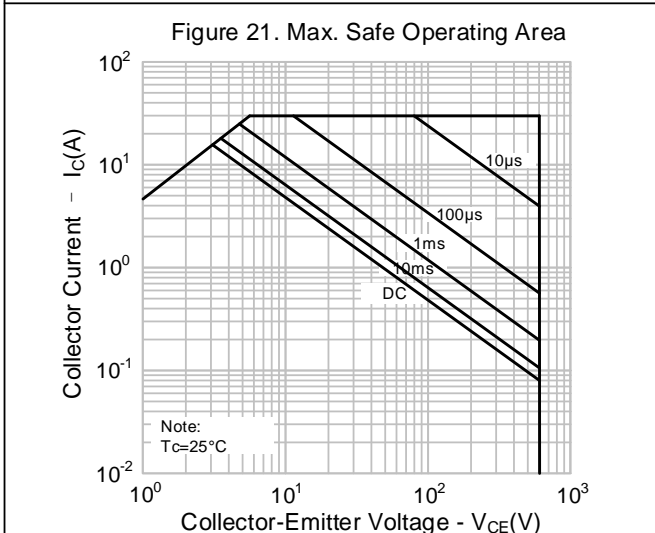
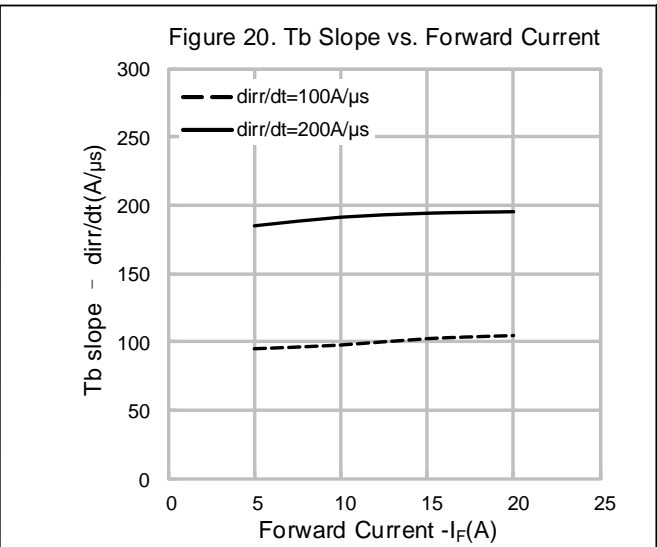
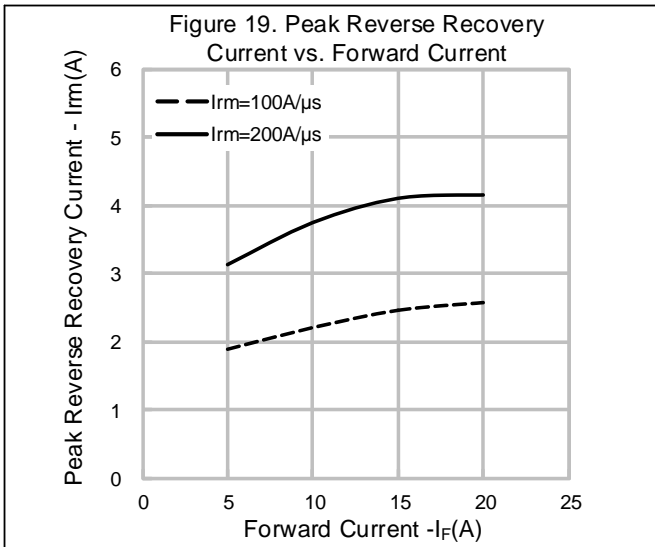
TYPICAL CHARACTERISTICS CURVE (CONTINUED)



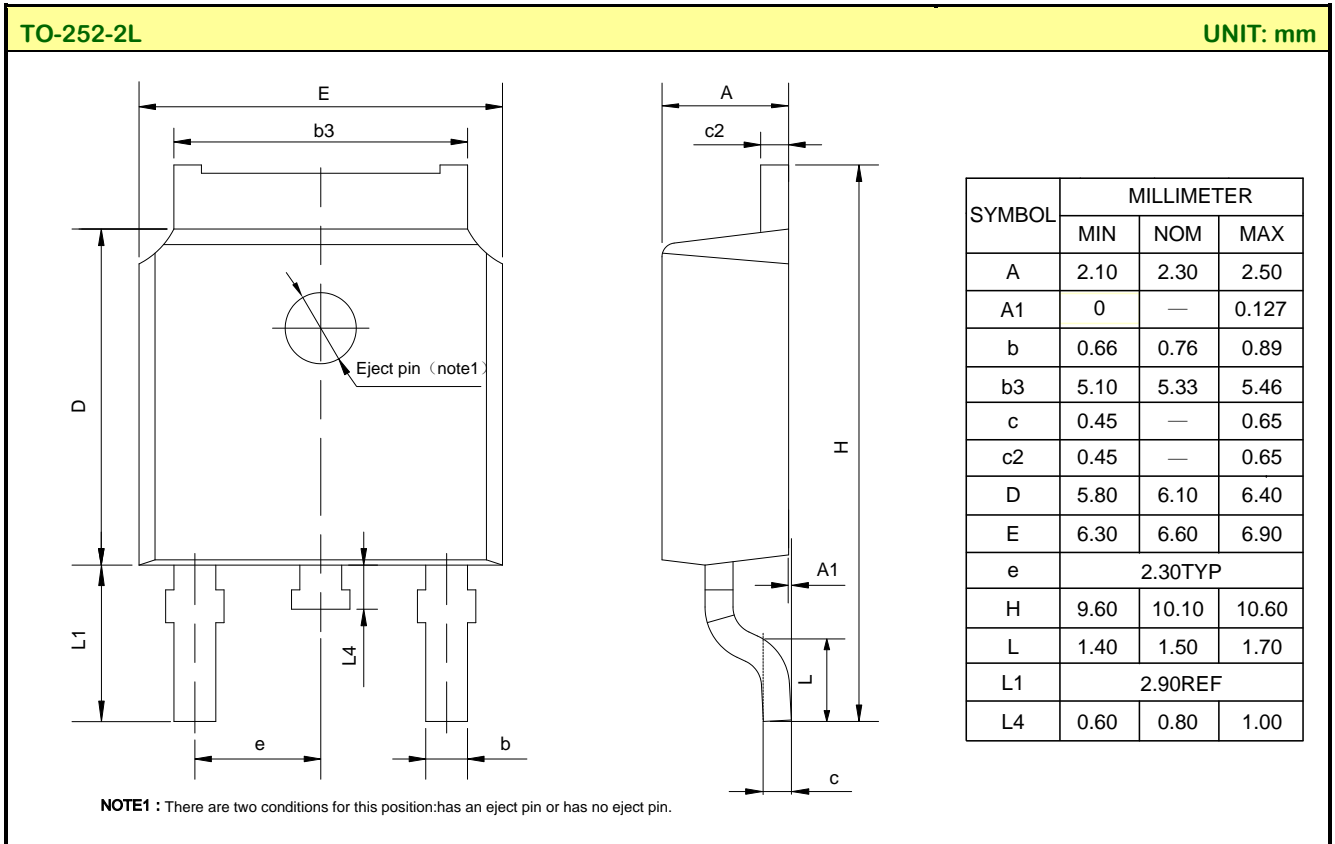
TYPICAL CHARACTERISTICS CURVE (CONTINUED)



TYPICAL CHARACTERISTICS CURVE (CONTINUED)



PACKAGE OUTLINE



MOS DEVICES OPERATE NOTES:

Electrostatic charges may exist in many things. Please take following preventive measures to prevent effectively the MOS electric circuit as a result of the damage which is caused by discharge:

- The operator must put on wrist strap which should be earthed to against electrostatic.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed in antistatic/conductive containers for transportation.

Important notice :

1. Silan reserves the right to make changes of this instruction without notice.
2. Customers should obtain the latest relevant information when purchasing and should verify whether such information is latest and complete. Please read this instruction and application manual and related materials carefully before using products, including the circuit operation precautions, etc.
3. The products belong to consumer electronic products. Silan does not give any warranties as to the suitability of the Silan's product for any specific use. The design intent, design definition and design of the product are not intended for application (the application stated in this instruction includes use, etc.) in transportation equipment, medical equipment, life-saving equipment, aerospace equipment, , non-civil equipment or non-civil use, etc. (the equipment stated in this instruction includes systems, devices, etc., all referred to as equipment).The product should not be used in any equipment or system whose manufacture, use or sale is prohibited under any applicable laws or regulations ("unintended use"). If the product is used for unintended use, therefore the full risks of such products application are borne by the customer and Silan assumes no liability for the product used for the unintended use. If the customer intends to use the Silan's product in a application where malfunction or failure can be reasonably be expected to result in personal injury, or serious property, or environment damage, the customer shall make adequate assessment, testing and verification, and Silan shall not be liable for such applications.
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7. Please use and apply product in compliance with all applicable laws and regulations, including but not limited to trade control regulations etc. The product is civil electronic product, please do not use it in non-civil fields.
8. Product promotion is endless, our company will wholeheartedly provide customers with better products!
9. Website: <http://www.silan.com.cn>

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Rev: 1.0

Revision History:

1. First release
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