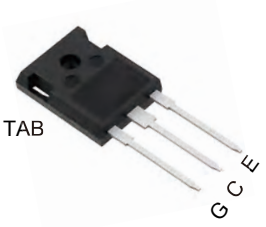
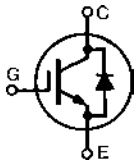
SG25T120UDB2

Discrete IGBTs

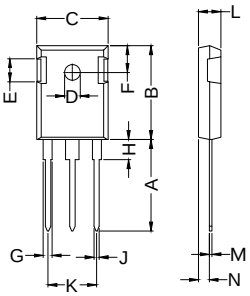
V_{CES} = 1200V
I_{C100} = 25A
$V_{CE(sat)}$ ≤ 1.95V
$t_{fi(typ)}$ = 75ns



G=Gate, C=Collector,
E=Emitter,TAB=Collector



Dimensions TO-247AD



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.620	0.640
ØD	3.15	3.65	0.124	0.144
E	4.32	5.49	0.170	0.216
F	5.40	6.30	0.213	0.248
G	1.65	2.18	0.065	0.086
H	3.80	4.50	0.150	0.177
J	1.00	1.40	0.039	0.055
K	10.80	11.10	0.425	0.437
L	4.70	5.30	0.185	0.209
M	0.40	0.80	0.016	0.031
N	1.50	2.49	0.059	0.098

IGBT

Symbol	Test Conditions	Maximum Ratings	Unit
V_{CES} V_{CGR}	T_J=25°C to 150°C T_J=25°C to 150°C; R_{GE}=1 MΩ ;	1200 1200	V
V_{GES} V_{GEM}	Continuous Transient	±20 ±30	V
I_{C25} I_{C100} I_{CM}	T_C=25°C; limited by leads T_C=100°C T_C=25°C, 1 ms	50 25 75	A
SSOA (RBSOA)	V_{GE}=15V; T_{VJ}=125°C; R_G=5Ω Clamped inductive load	I_{CM}=120 @ 0.8 V_{CES}	A
P_C	T_C=25°C	208	W
T_J T_{JM} T_{stg}		-55...+175 170 -55...+150	°C
	Maximum lead temperature for soldering 1.6 mm (0.062 in.) from case for 10s Maximum Tab temperature for soldering SMD devices for 10s	300 260	°C °C
M_d	Mounting torque (M3)	1.13/10	Nm/lb.in.
Weight	Typical	6	g

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
BV_{CES}	I_C=1mA; V_{GE}=0V	1200			V
$V_{GE(th)}$	I_C=750uA; V_{CE}=V_{GE}	4.5	5.8	7.5	V
I_{CES}	V_{CE}=V_{CES}; T_J=25°C V_{GE}=0V; T_J=125°C			750 4	uA mA
I_{GES}	V_{CE}=0V; V_{GE}=±20V			±200	nA
$V_{CE(sat)}$	I_C=I_{C90}; V_{GE}=15V		1.95	2.5	V

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

SG25T120UDB2

Discrete IGBTs

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
g_{ts}	I_C=I_{C90}; V_{CE}=10V Pulse test, t ≤ 300us, duty cycle ≤ 2%	33	44		S
$I_{C(ON)}$	V_{GE}=10V; V_{CE}=10V		120		A
C_{ies}	V_{CE}=25V; V_{GE}=0V; f=1MHz		2370		pF
C_{oes}			59		
C_{res}			43		
Q_g	I_C=I_{C90}; V_{GE}=15V; V_{CE}=0.5V_{CES}		142		nC
Q_{ge}			23		
Q_{gc}			75		
$t_{d(on)}$	Inductive load, T_J=25°C I_C=I_{C90}; V_{GE}=15V; V_{CE}=0.5V_{CES}; R_G=R_{off}=10Ω Remarks:Switching times may increase for V_{CE}(Clamp)＞0.8V_{CES} higher T_J or increased R_G		34		ns
t_{ri}			36		ns
$t_{d(off)}$			198		ns
t_{fi}			75		ns
E_{off}			0.95		mJ
$t_{d(on)}$	Inductive load, T_J=125°C I_C=I_{C90}; V_{GE}=15V; V_{CE}=0.5V_{CES}; R_G=R_{off}=10Ω Remarks:Switching times may increase for V_{CE}(Clamp)＞0.8V_{CES} higher T_J or increased R_G		50		ns
t_{ri}			40		ns
E_{on}			3.8		mJ
$t_{d(off)}$			400		ns
t_{fi}			160		ns
E_{off}			2.5		mJ
R_{thJC}				0.60	K/W
R_{thCK}			0.25		K/W

Reverse Diode (FRED)

(T_j=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
V_F	I_F=25A; T_{VJ}=150°C T_{VJ}=25°C		2.7 3.0		V
I_{RM}	V_R=100V; I_F=25A; -di$_F$/dt=100A/us L ≤ 0.05uH; T_{VJ}=100°C		12		A
t_{rr}	I_F=1A; -di/dt=50A/us; V_R=30V; T_J=25°C		40		ns
R_{thJC}	Diode		1.1	1.2	K/W

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

SG25T120UDB2

Discrete IGBTs

Features

- Trench Field Stop IGBT technology
- Low switching losses
- Switching frequency up to 20KHz
- Square RBSOA, no latch up
- High short circuit capability
- Positive temperature coefficient for easy parallelling
- MOS input, voltage controlled
- Ultra fast free wheeling diodes

Application

- AC and DC motor control
- AC servo and robot drives
- power supplies
- welding inverters

Advantages

- space and weight savings
- reduced protection circuits

Characteristics Curve

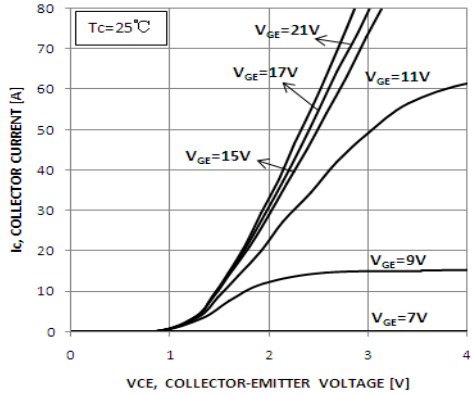


Figure 1. Typical Output Characteristics

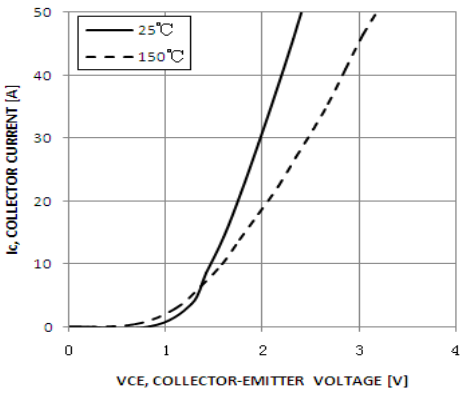


Figure 2. Typical Output Characteristics

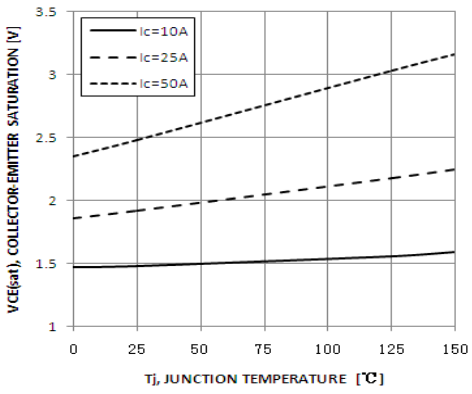


Figure 3. Typical Saturation Voltage vs. Junction Temperature

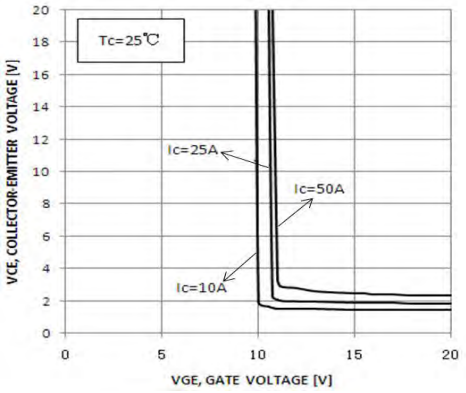


Figure 4. Typical Saturation Voltage vs. Gate-Emitter Voltage

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

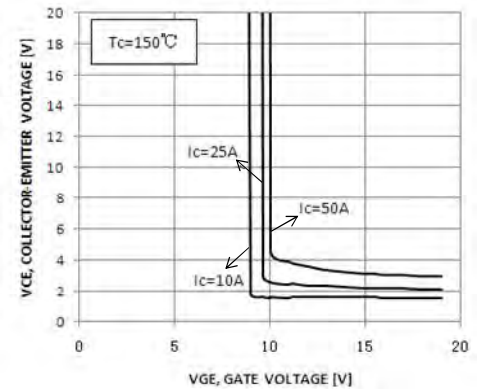


Figure 5. Typical Saturation Voltage vs.Gate-Emitter Voltage

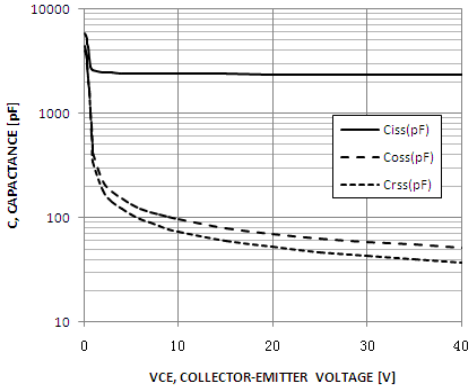


Figure 6. Typical Capacitance Characteristics

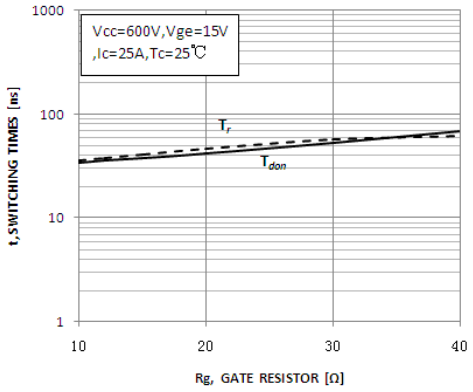


Figure 7. Typical Turn-On Characteristics vs. Gate Resistance

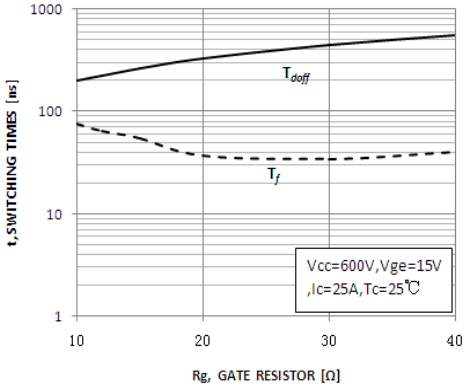


Figure 8. Typical Turn-Off Characteristics vs. Gate Resistance

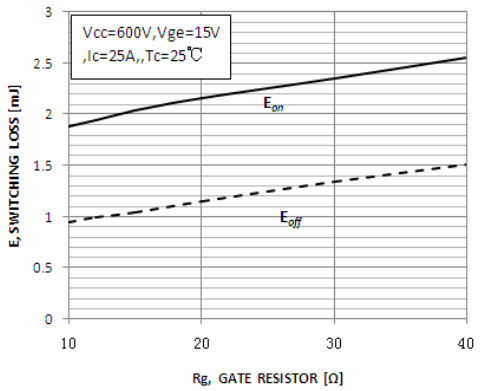


Figure 9. Typical Switching Losses vs. Gate Resistance

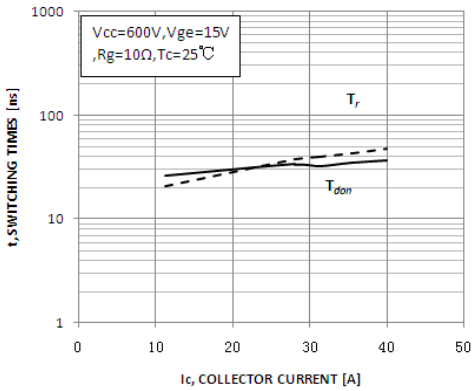


Figure 10. Typical Turn-On Characteristics vs. Collector Current

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

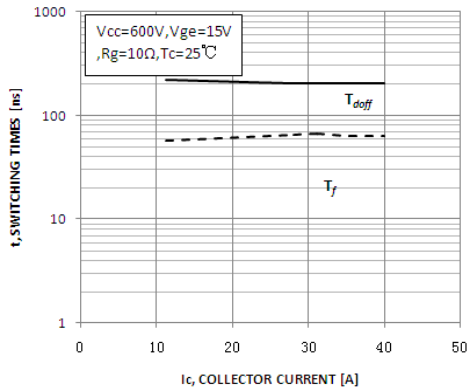


Figure 11. Typical Turn-Off Characteristics vs. Collector Current

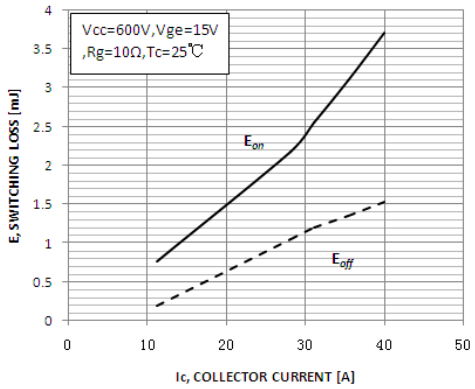


Figure 12. Typical Switching Losses vs. Collector Current

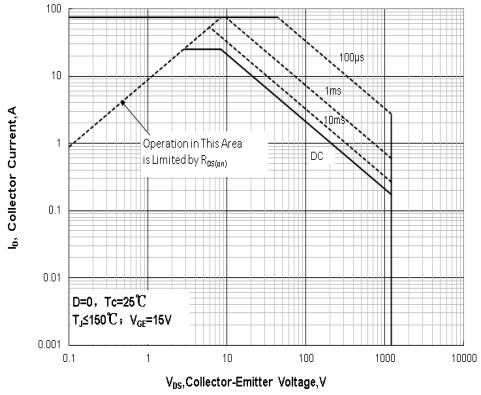


Figure 13. Typical IGBT Forward Safe Operating Area

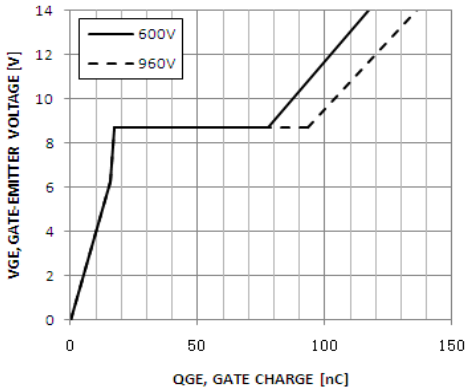


Figure 14. Typical Gate Charge

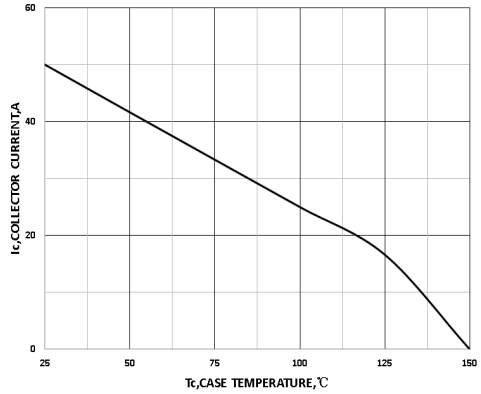


Figure 15. Collector Current vs.Case Temperature

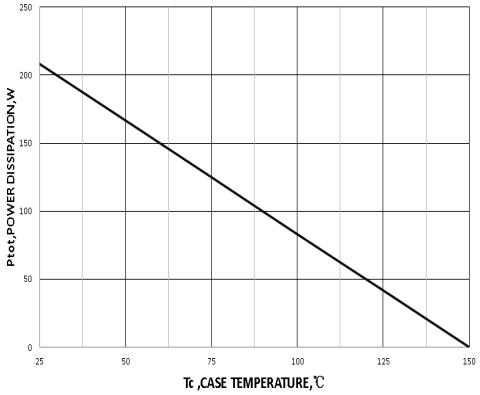


Figure 16. Power Dissipation vs.Case Temperature

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

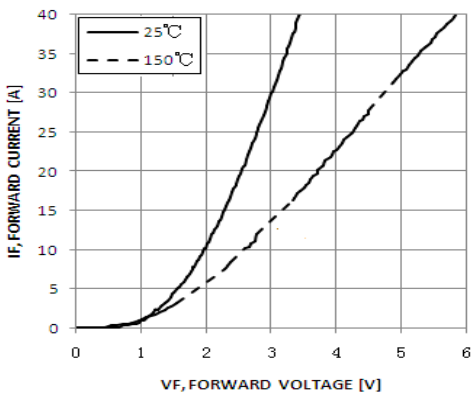


Figure 17. Typical Diode Forward Characteristics

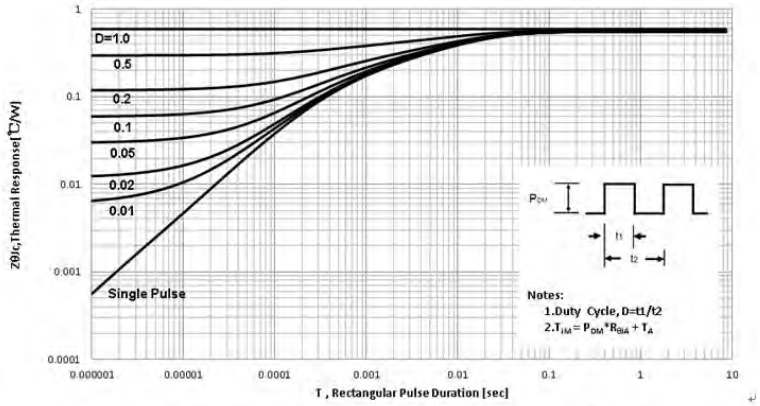


Figure 18. **IGBT Transient Thermal Impedance**

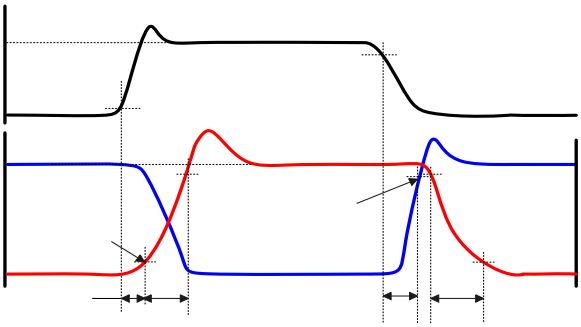


Figure A. Definition of switching times

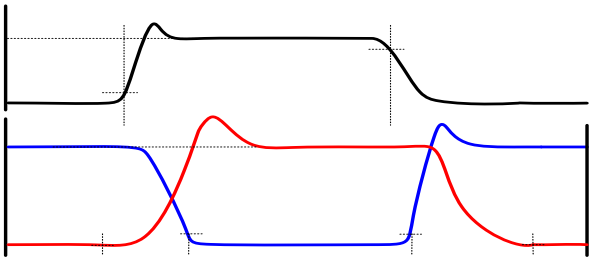


Figure B. Definition of switching losses

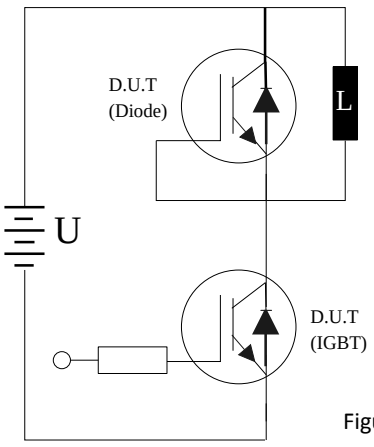


Figure D. Dynamic test circuit

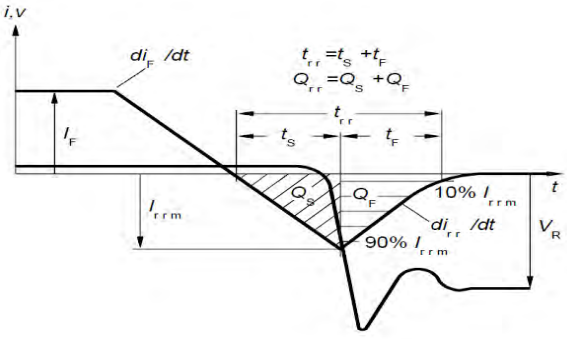


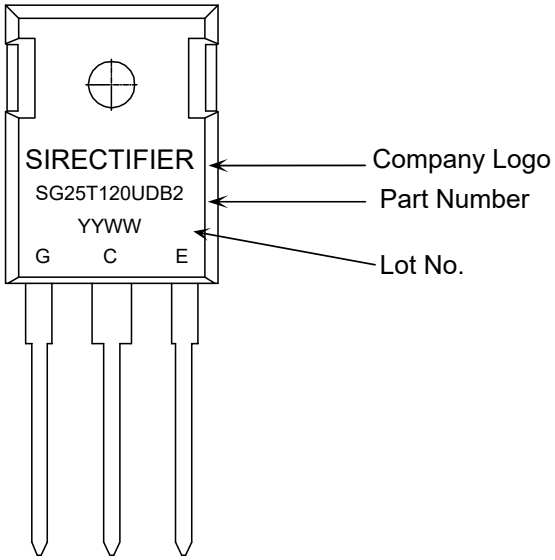
Figure C. Definition of diodes switching characteristics

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com

SG25T120UDB2

Discrete IGBTs

MARKING



ORDERING INFORMATION

Part Number	Package	Shipping	Marking Code
SG25T120UDB2	TO-247AD	30pcs / Tube	SG25T120UDB2

www.sirectifier.com Tel: +86-519-86800000 Fax: +86-519-88019019 E-mail: sales@sirectifier.com