GJSCR
GJSSR

TZM100GB120A
IGBT module 100A 1200V

产品特点

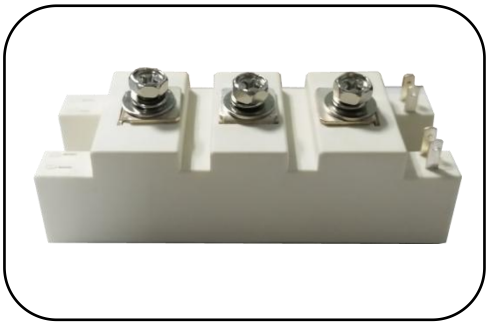
●MOS 输入（电压控制）
●N 型通道，匀质硅
●低电感
●拖尾电流非常低，温度依赖性低
●高短路能力，自我限制到 6×Icnom
●闭锁自由
●快速软反转 CAL 二极管
●DCB 绝缘铜板
●大间距（10mm）和爬电距离（20mm）

应用：

开关（非线性使用）

Features:

●MOS input (voltage controlled)
●N channel, homogeneous Si
●Low inductance case
●Very low tail current with low temperature dependence
●High short circuit capability, self limiting to 6×Icnom
●Latch-up free
●Fast & Soft inverse CAL diodes
●Isolated copper baseplate using DCB Direct Copper Bonding Technology
●Large clearance(10mm) and creepage distances (20mm)



Application:
Switching (not for linear use)

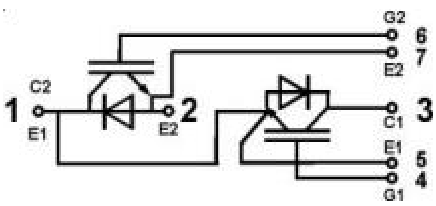
Absolute Maximum Ratings Tc=25℃，unless otherwise specified

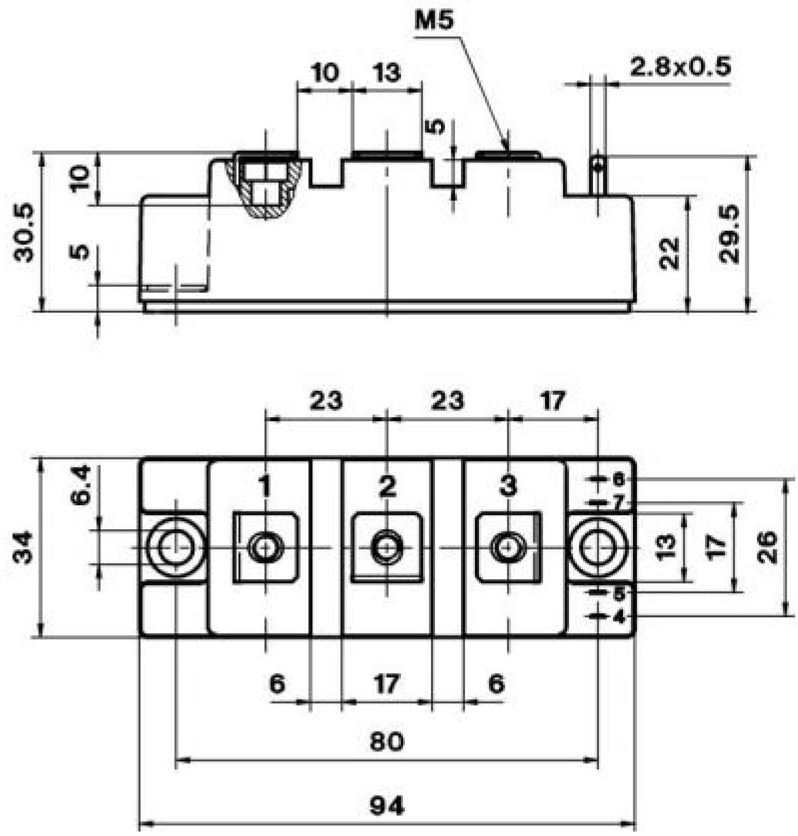
Symbol	Parameter	Conditions	Values	Unit
IGBT				
V_{CES}	Collector-Emitter Voltage		1200	V
I_C	DC Collector Current	Tc=25（80）℃	100（90）	A
I_{CRM}		tp=1ms	150	A
V_{GES}	Gate-Emitter Voltage		±20	V
T_j	Junction temperature range		-40 to +150	℃
T_{stg}	Storage temperature range		-40 to +125	℃
V_{isol}	Insulation Test Voltage	AC，t=1min I_{isol}:1mA(max)	3000	V
Inverse diode				
I_F	Average forward current	Tc=25（80）℃	95(65)	A
I_{FRM}	Repetitive peak forward current	tp=1ms	150	A
I_{FSM}	Non-repetitive Surge Forward Current	tp=10ms；sin.；T_j=150℃	720	A
Freewheeling diode				
I_F	Average forward current	Tc=25（80）℃	130(90)	A
I_{FRM}	Repetitive peak forward current	tp=1ms	200	A
I_{FSM}	Non-repetitive surge forward current	tp=10ms；sin.；T_j=150℃	1100	A

Characteristics			Tc=25℃，unless otherwise specified			
Symbol	**Parameter**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
IGBT						
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	V_{CE}=V_{GE}，Ic=2mA	4.5	5.5	6.5	V
I_{CES}	Colltctor Leakage Current	V_{GE}=0，V_{CE}=V_{CES}，T_j=25（125）℃		0.1	0.3	mA
$V_{CE(T0)}$		T_j=25（125）℃		1.4 (1.6)	1.6 (1.8)	A
r_{CE}		V_{GE}=15V, Tj=25（125）℃		14.6 (20)	18.6 (25.3)	mΩ
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_{Cnom}=75A,V_{GE}=15V, chip level		2.5 (3.1)	3 (3.7)	V
Cies	Input Capacitance	Under following conditions V_{GE}=0, V_{CE}=25V, f=1 MHz		5	6.6	nF
Coes	Output Capacitance			0.72	0.9	nF
Cres	Reverse Transfer Capacitance			0.38	0.5	nF
L_{CE}					30	nH
$R_{CC'+EE'}$		res., terminal-chip Tc=25（125）℃		0.75 (1)		mΩ
$T_{d(on)}$	Turn-on Delay Time	V_{CC}=600V, I_{Cnom}=75A		30	60	ns
t_r	Rise Time	R_{Gon}=R_{Goff}=15Ω, T_j=125℃		70	140	ns
$T_{d(off)}$	Turn-off Delay Time	V_{GE}= ±15V		450	600	ns
t_f	Fall Time			70	90	ns
E_{on}(E_{off})	Turn-on Switching Energy(Turn-off Switching Energy)			10 (8)		mJ
Inverse diode						
V_F=V_{EC}	Forward voltage	I_{Fnom}=75A, V_{GE}=0V, T_j=25 (125)℃		2 (1.8)	2.5	V
$V_{(TO)}$	Threshold Voltage	T_j=125℃			1.2	V
r_T	Slope resistance	T_j=125℃		12	15	mΩ
I_{RRM}	Max.Reverse Recovery Current	I_{Fnom}=75A, T_j=125℃		27 (40)		A
Q_{rr}	Reverse Recovery Charge	di/dt=800A/μs		3 (10)		μC
E_{rr}		V_{GE}=0V		3		mJ
FWD						
V_F=V_{EC}	Forward voltage	I_F=100A, V_{GE}=0V, T_j=25		2 (1.8)	2.2	V

		(125)℃				
$V_{(TO)}$	Threshold Voltage	T_j=125℃			1.2	V
r_T	Slope resistance	T_j=125℃		8	11	mΩ
I_{RRM}	Max.Reverse Recovery Current	I_F=100A, T_j=25 (125)℃		35 (50)		A
Q_{rr}	Reverse Recovery Charge	di/dt=1000A/μs		5 (14)		μC
E_{rr}		V_{GE}=0V				mJ
Thermal characteristics						
$R_{th(j-c)}$	Junction-to-Case Thermal Resistance	Per IGBT			0.18	K/W
$R_{th(j-c)D}$	Junction-to-Case Thermal Resistance	Per Inverse Diode			0.5	K/W
$R_{th(j-c)FD}$	Junction-to-Case Thermal Resistance	Per FWD			0.36	K/W
$R_{th(c-s)}$	Case-to-Heatsink Thermail Resistance	Per module			0.05	K/W
Mechanical data						
M_s	Mount torque	To heatsink M6	3		5	Nm
M_t	Mount torque	To terminals M6	2.5		5	Nm
w	Weight				160	g

Circuit & Outline





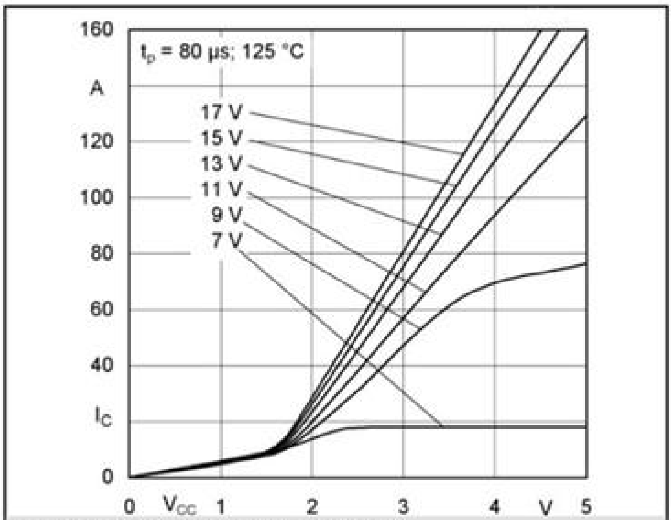


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

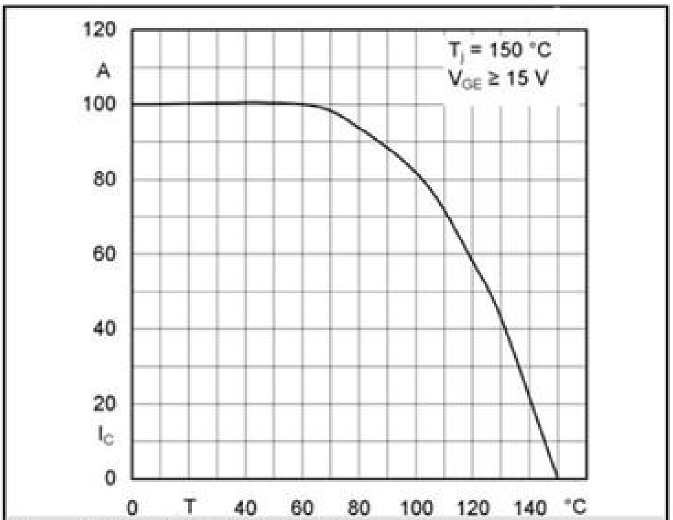


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

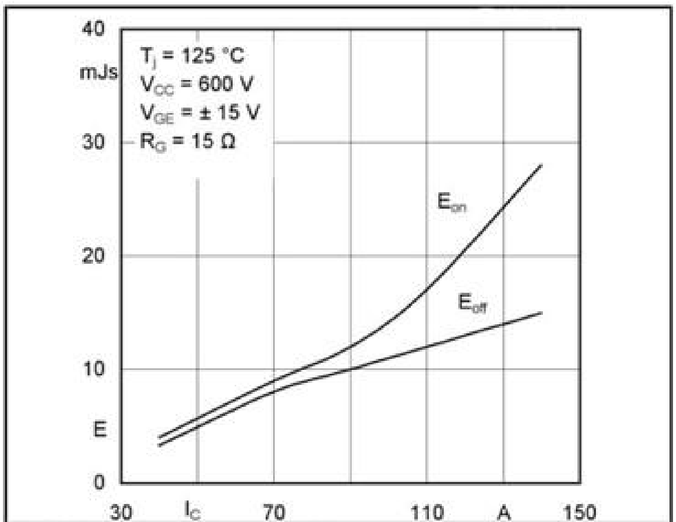


Fig. 3 Typ. turn-on /-off energy = f (I_C)

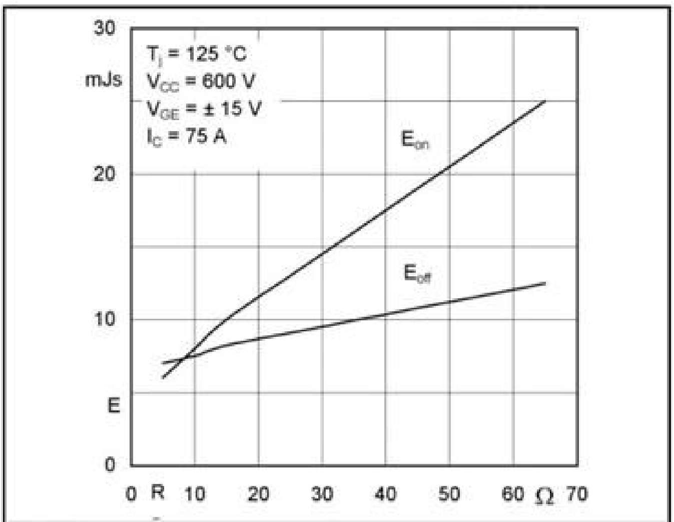


Fig. 4 Typ. turn-on /-off energy = f (R_G)

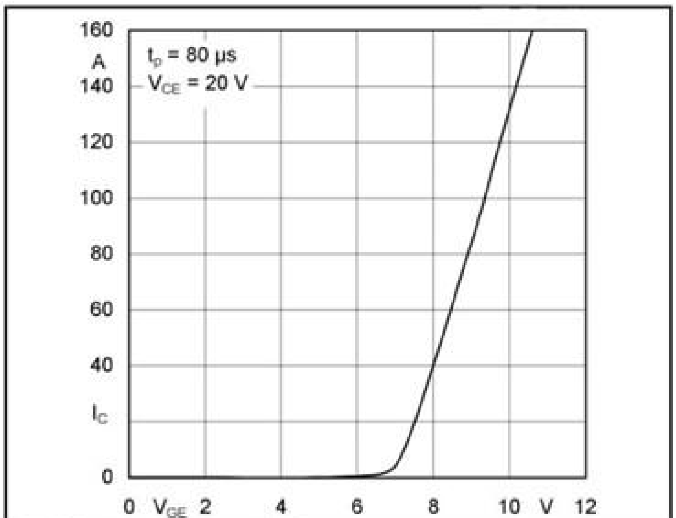


Fig. 5 Typ. transfer characteristic

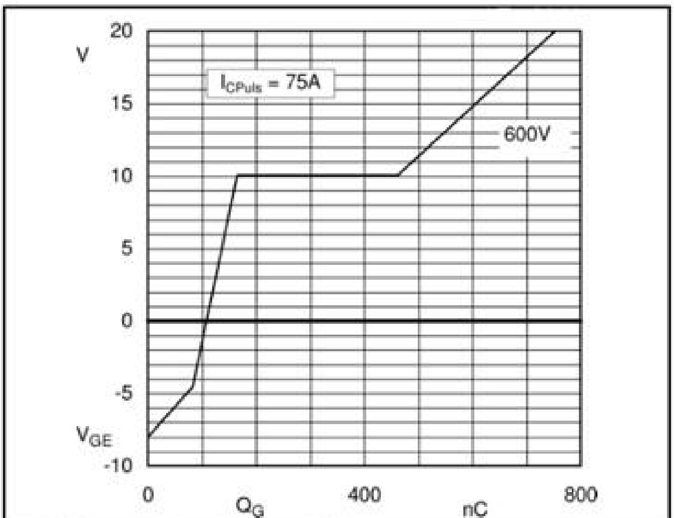


Fig. 6 Typ. gate charge characteristic

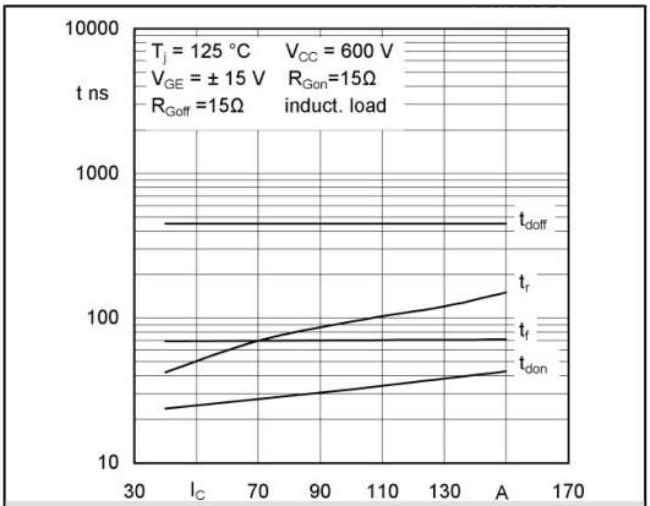


Fig. 7 Typ. switching times vs. I_C

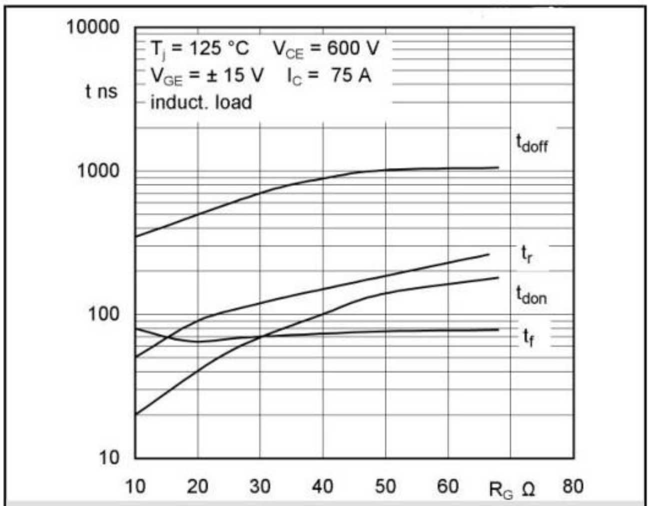


Fig. 8 Typ. switching times vs. gate resistor R_G

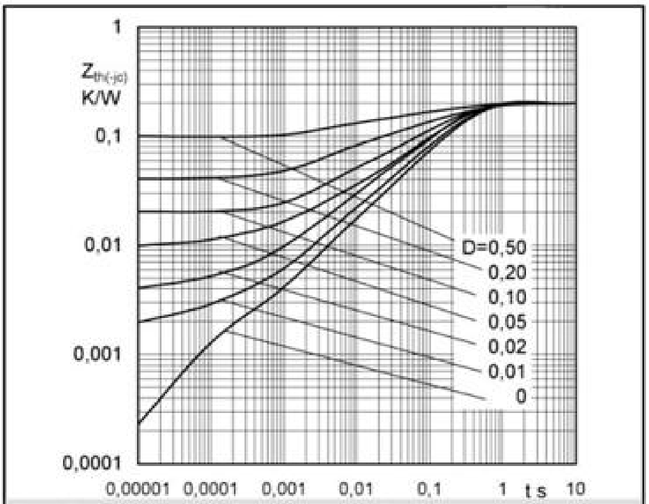


Fig. 9 Transient thermal impedance of IGBT

$Z_{thp(j-c)} = f(t_p)$; $D = t_p/t_c = t_p*f$

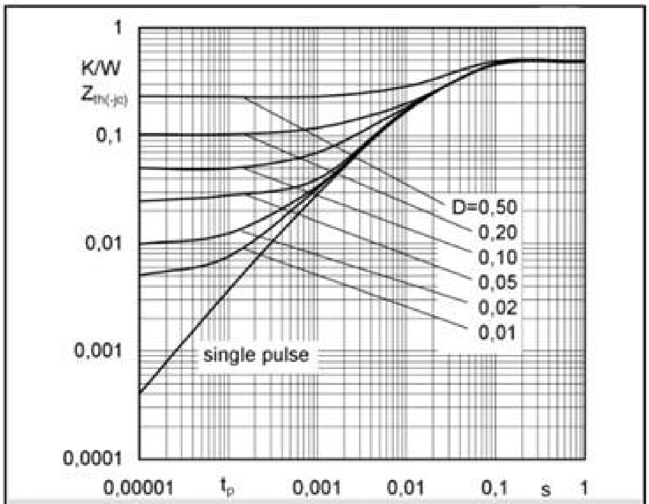


Fig. 10 Transient thermal impedance of FWD

$Z_{thp(j-c)} = f(t_p)$; $D = t_p/t_c = t_p*f$

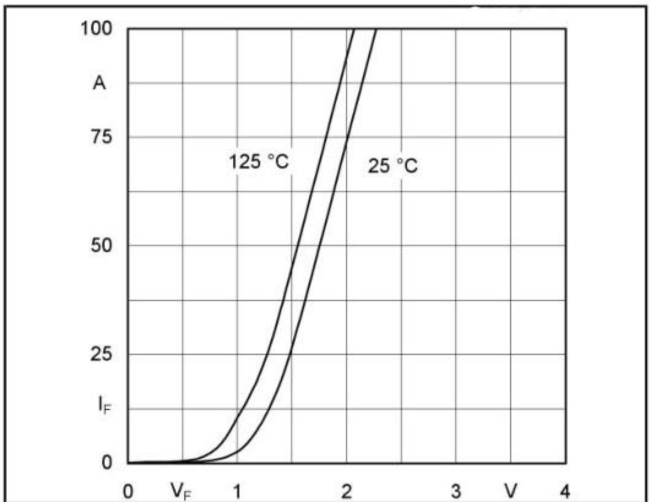


Fig. 11 CAL diode forward characteristic

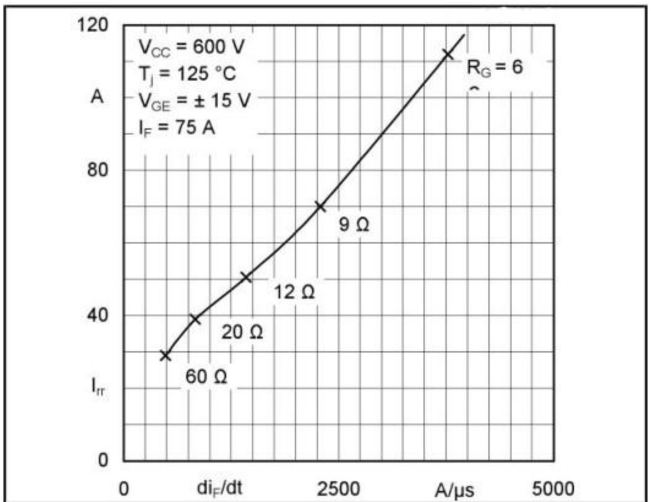


Fig. 12 Typ. CAL diode peak reverse recovery current

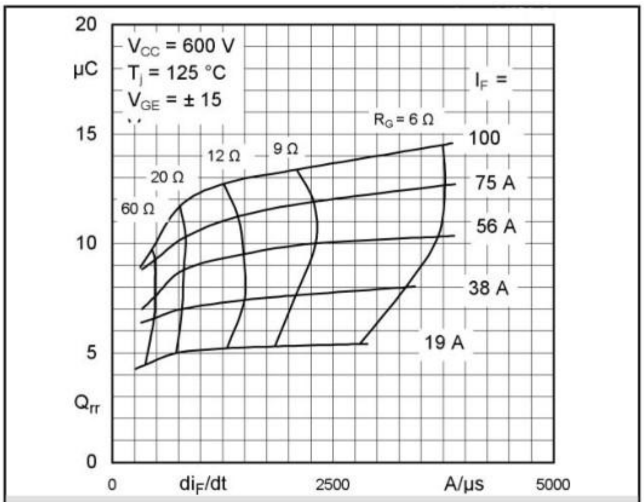


Fig. 13 Typ. CAL diode recovered charge