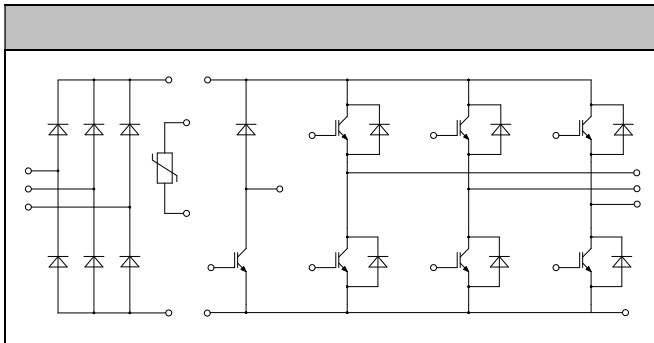




120V
40A



- **Motor Drives**
- **AC and DC servo drive amplifier**
- **UPS (Uninterruptible Power Supplies)**



- **Low switching losses**
- **Low $V_{CE(sat)}$ with positive temperature coefficient**
- **Including fast & soft recovery anti-parallel FWD**
- **Low inductance case**
- **High short-circuit capability (10s)**
- **Maximum junction temperature 175°C**

Collector-Emitter Voltage	V_{CES}	$V_{CE}=0V, I_C=1mA, T_J=25^\circ C$	120	V
Continuous Collector Current	I_C	$T_C=100^\circ C, T_{Jmax}=175^\circ C$	40	A
Repetitive Peak Collector Current	I_{CM}	$t_p=1ms$	80	A
Gate-Emitter Voltage	V_{GES}	$T_J=25^\circ C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25^\circ C$ $T_{Jmax}=175^\circ C$	227	W



Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=12mA, T_j=25C$	52	60	68	V	
Collector-Emitter Cut-off Current	I_{CS}	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	mA	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=4A, V_{GE}=15V, T_j=25C$		190	230	V	
		$I_C=4A, V_{GE}=15V, T_j=125C$		220			
		$I_C=4A, V_{GE}=15V, T_j=150C$		240			
Gate Charge	Q_g			035		μC	
Input Capacitance	C_{is}	$V_{CE}=25V, V_{GE}=0V$		225		pF	
Reverse Transfer Capacitance	C_{es}	$f=1MHz, T_j=25C$		010		pF	
Gate-Emitter leakage current	I_{GS}	$V_{CE}=0V, V_{GE}=20V, T_j=25C$			40	mA	
Turn-on Delay/line	t_{on}	$I_C=40A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=13$ $T_j=25C$		18		ns	
Rise time	t_r			21		ns	
Turn-off Delay/line	t_{off}			30		ns	
Fall time	t_f			2		ns	
Energy Dissipation During Turn-on/line	E_{on}			425		nJ	
Energy Dissipation During Turn-off/line	E_{off}			200		nJ	
Turn-on Delay/line	t_{on}		$I_C=40A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=13$ $T_j=125C$		20		ns
Rise time	t_r				28		ns
Turn-off Delay/line	t_{off}				40		ns
Fall time	t_f				9		ns
Energy Dissipation During Turn-on/line	E_{on}			604		nJ	
Energy Dissipation During Turn-off/line	E_{off}			305		nJ	
SCData	I_c	$T_p=10s, V_{GE}=15V, T_j=150C,$ $V_{CE}=90V, V_{CEM}=120V$		200		A	



Repetitive Peak Reverse Voltage	V_{RM}	T_j=25°C	120	V
Continuous DC Forward Current	I_F		40	A
Repetitive Peak Forward Current	I_{RM}	t_F=1ms	80	A
R_{θJC}	R_θ	V_F=0, t_F=10ms, T_j=125°C	20	As
		V_F=0, t_F=10ms, T_j=150°C	20	

Forward Voltage	V_F	I_F=40A, T_j=25°C	190	225	V
		I_F=40A, T_j=125°C	190		
		I_F=40A, T_j=150°C	185		
Recovered Charge	Q_r	I_F=40A	415		μC
Peak Reverse Recovery Current	I_r	V_R=60V -d_F/d_t=160A/μs	42		A
Reverse Recovery Energy	E_{rec}	T_j=25°C	130		nJ
Recovered Charge	Q_r	I_F=40A	800		μC
		V_R=60V -d_F/d_t=160A/μs	46		A
		T_j=125°C	238		nJ

Collector-Emitter Voltage	V_{CES}	$V_{GE}=0V, I_C=1mA, T_j=25C$	120	V
Continuous Collector Current	I_C	$T_C=100C, T_{jmax}=175C$	25	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	50	A
Gate-Emitter Voltage	V_{GES}	$T_j=25C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25C$ $T_{jmax}=175C$	166	W

Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{GE}, I_C=12mA, T_j=25C$	52	60	68	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	nA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=25A, V_{GE}=15V, T_j=25C$		190	230	V
		$I_C=25A, V_{GE}=15V, T_j=125C$		220		
		$I_C=25A, V_{GE}=15V, T_j=150C$		230		
Gate Charge	Q_g			021		nC
Input Capacitance	C_{iss}	$V_{CE}=25V, V_{GE}=0V$		160		nF
Reverse Transfer Capacitance	C_{res}	$f=1MHz, T_j=25C$		007		nF
Gate-Emitter Leakage current	I_{GES}	$V_{GE}=0V, V_{CE}=20V, T_j=25C$			100	nA
Turn-on Delay/line	$t_{(on)}$	$I_C=25A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_G=18$ $T_j=25C$		175		ns
Rise time	t_r			38		ns
Turn-off Delay/line	$t_{(off)}$			40		ns
Fall time	t_f			65		ns
Energy Dissipation During Turn-on/line	E_{on}			195		nJ
Energy Dissipation During Turn-off/line	E_{off}			120		nJ



MG40P12E1



TurnOnDelayTime

t(on)

13

M

13

I_C = 25A

V_{CE} = 60V

V_{GE} = ±15V

R_θ = 18

T_J = 125 C € p V ðu P `Q™Xr` ‡P p ö ðu q g' @ (" @ &cH 1p 7





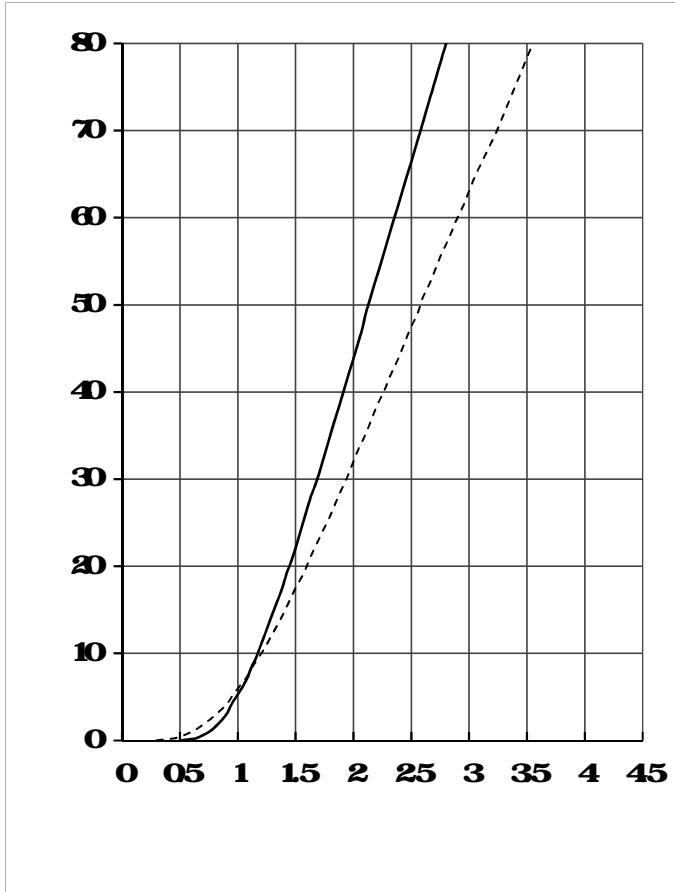
Repetitive Peak Reverse Voltage	V_{RRM}	$T_J=25^{\circ}\text{C}$	160	V
Average Output Current 50kHz, sine wave	$I_{(AV)}$	$T_C=100^{\circ}\text{C}$	50	A
Minimum RMS Current at Rectifier Output	I_{RSM}	$T_C=100^{\circ}\text{C}$	60	A
Surge Forward Current	I_{SM}	$V_F=0, t_F=10\text{ms}, T_J=50^{\circ}\text{C}$	300	A
ft value	f_t	$V_F=0, t_F=10\text{ns}, T_J=50^{\circ}\text{C}$	500	MHz

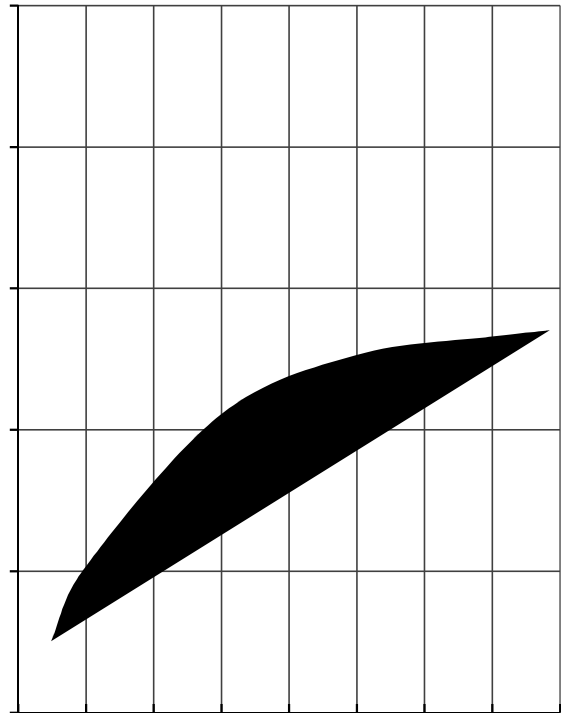
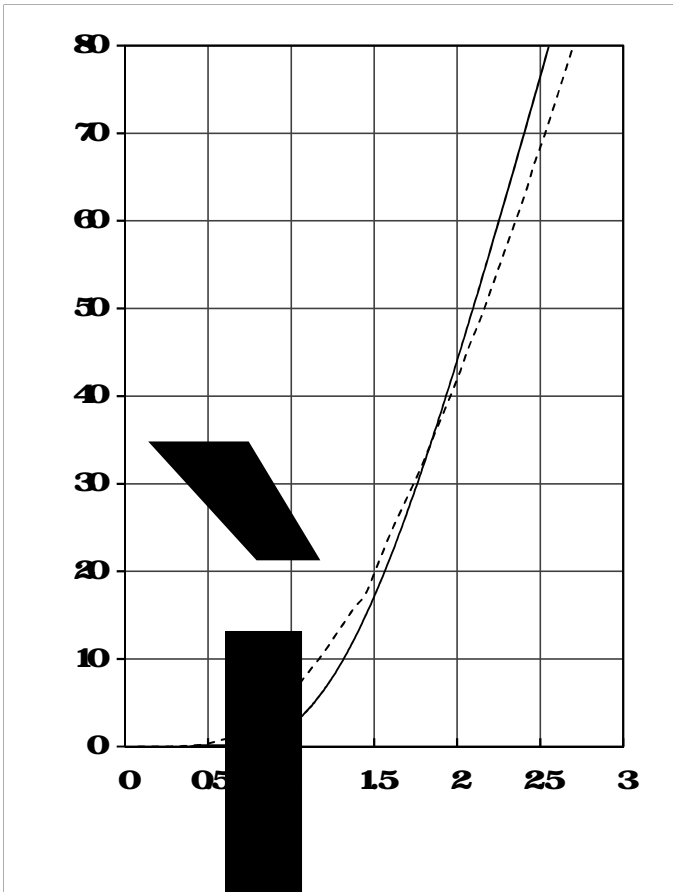
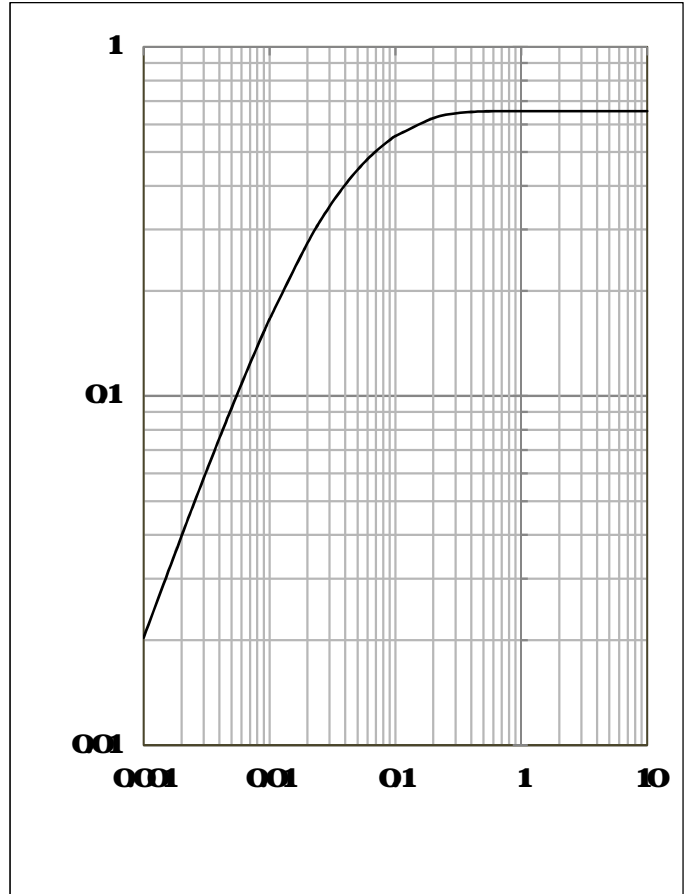
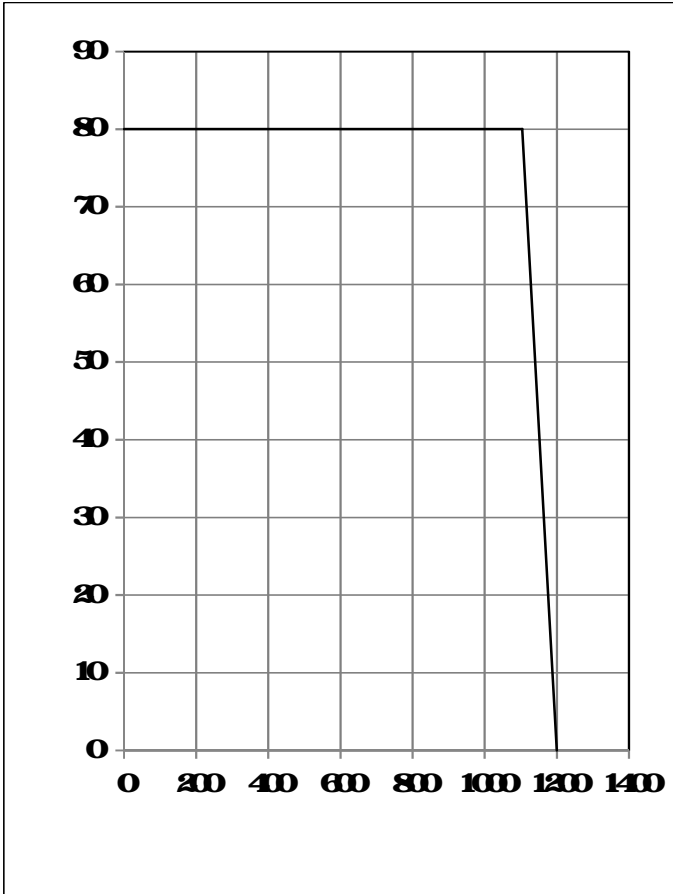
Diode Forward Voltage	V_F	$I_F=4\text{A}, T_J=125^{\circ}\text{C}$	112	V
Reverse Current	I_R	$T_J=125^{\circ}\text{C}, V_R=160\text{V}$	20	mA

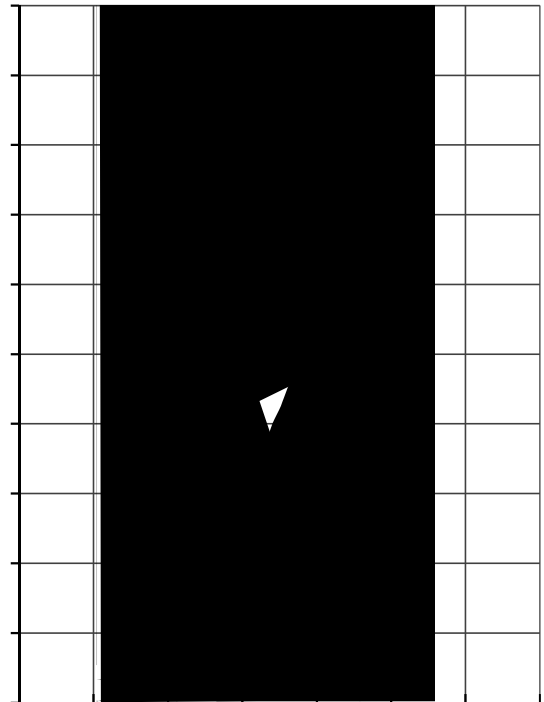
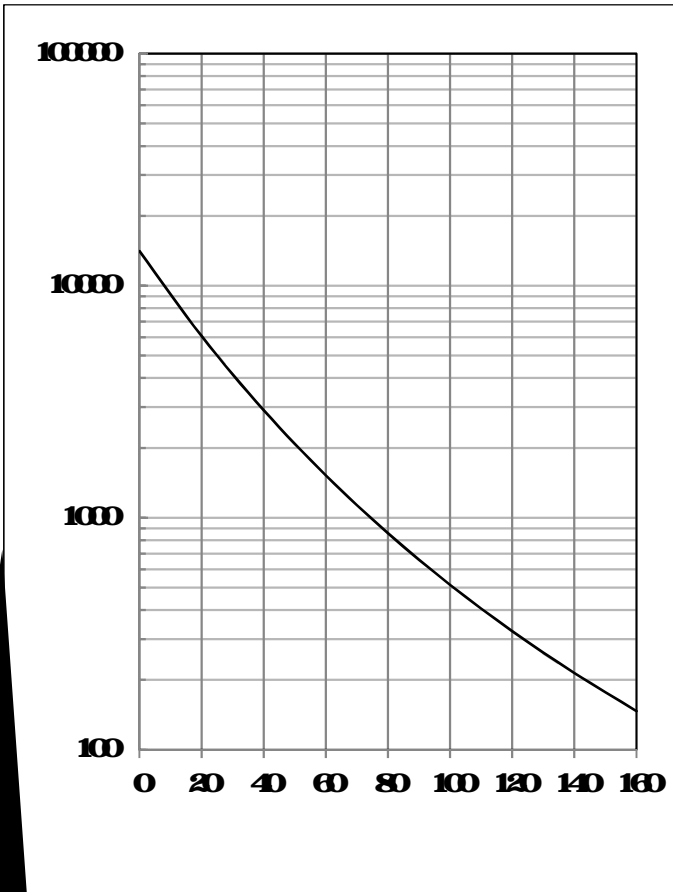
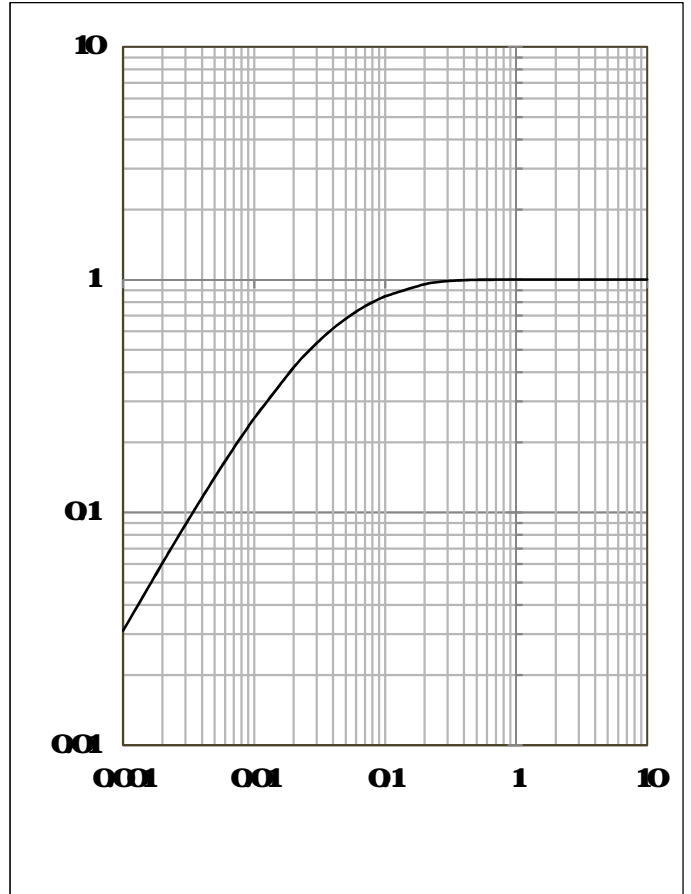
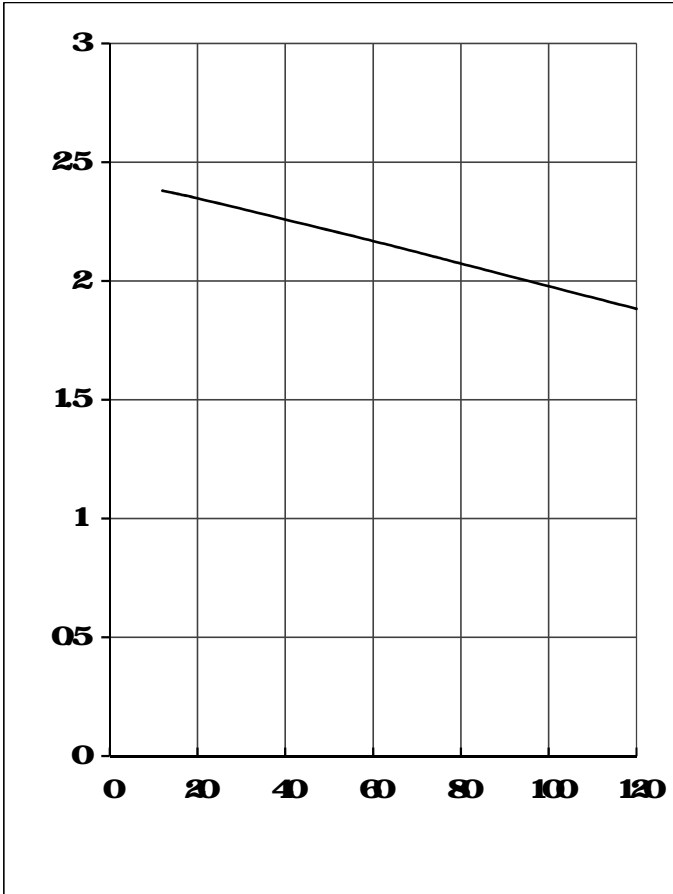
Rated Resistance	R_{θ}		50	$\text{k}\Omega$
Deviation of R100	RR	$T_C=100^{\circ}\text{C}, R_{100}=483^{\circ}\text{C}$	-5	5 %
Power Dissipation	P_{θ}			200 mW
B value	B_{500}	$R_{\theta} = R_{\theta} \exp\left(\frac{P_{500}}{1000}\right) \left(\frac{1}{T_C} - \frac{1}{298.15}\right)$	335	K

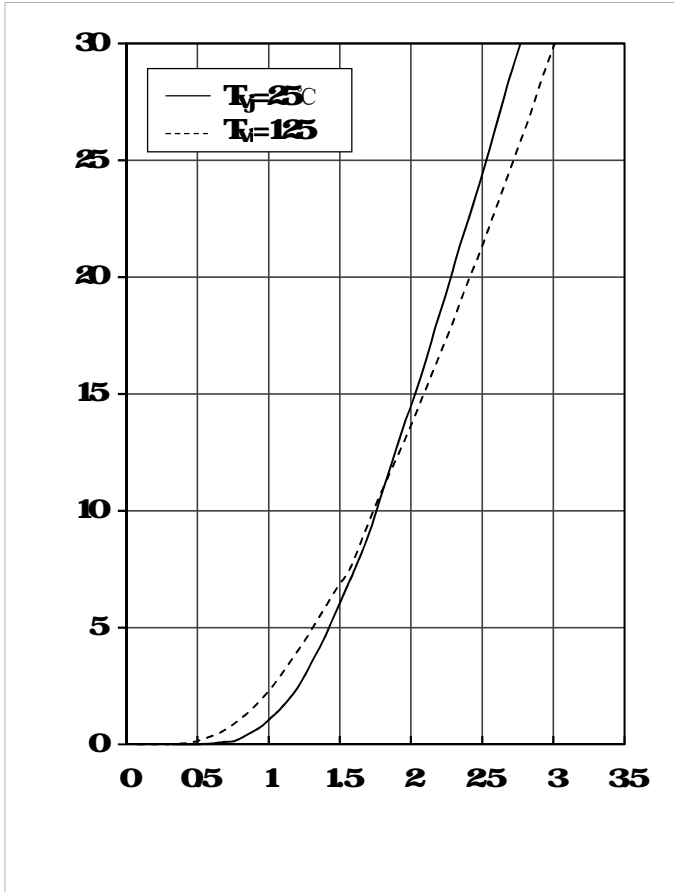


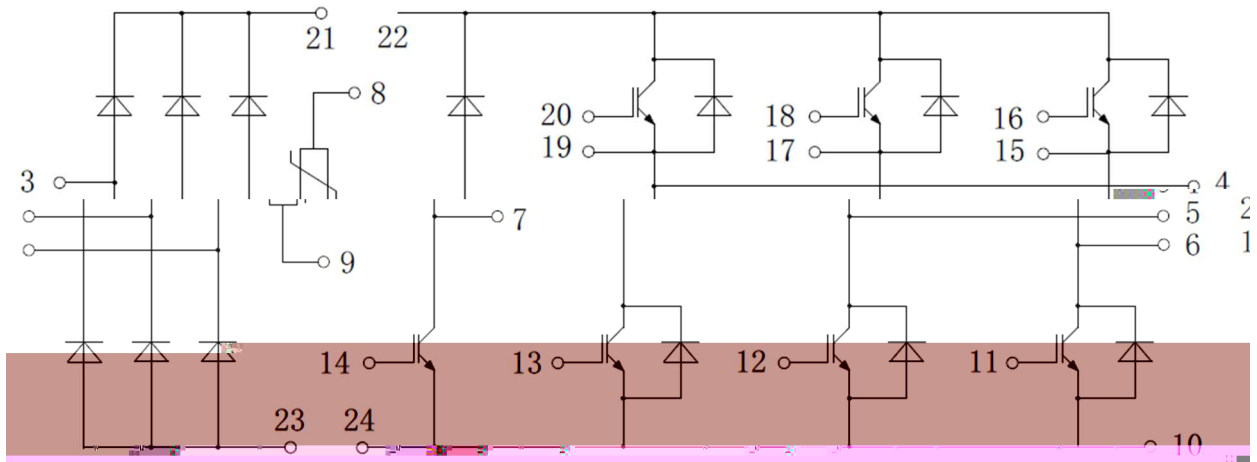
Isolation Voltage	V_{sd}	t=1min, f=50Hz	250			V
Minimum Junction Temperature □	T_{junction}				175	°C
Operating Junction Temperature	T_{jo}		-40		150	°C
Storage Temperature	T_{stg}		-40		125	°C
Stray inductance	L_{sce}			60		nH
Module lead resistance, terminals dip	R_{case}	T_c=25°C, per switch		40		mΩ
	R_{lead}			30		
Thermal Resistance Junction to Case	R_{jc}	per GB Fineter			066	KW
		per Dole ineter			100	
		per GB hake copper			090	
		per Dole d copper			150	
		per Dole redifier			075	
Thermal Resistance Case to Sink	R_{cs}	per GB Fineter		031		KW
		per Dole ineter		048		
		per GB hake copper		033		
		per Dole d copper		070		
		per Dole redifier		036		
		per Middle		002		
Mating Force Per Clamp	F		30		60	N
Weight of Module	G			180		g











Dimensions in Millimeters

