

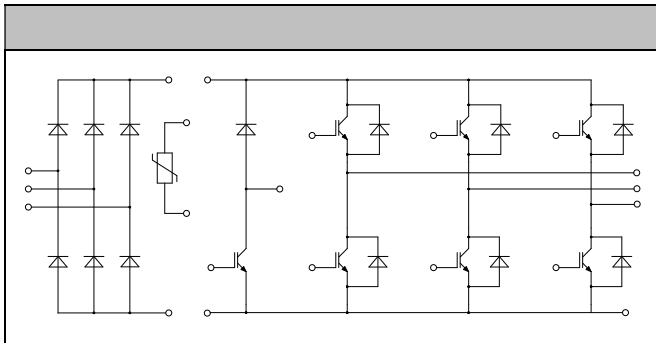


MG40P12E1



120V
40A

Mitsubishi
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}	$V_{CE=0V, I_C=1mA, T_J=25$	120	V
Continuous Collector Current	I_C	$T_C=100$ <small>$v_{jmax} 175$</small>	40	A
Repetitive Peak Collector Current	I_{CM}	tp=1ms	80	A
Gate-Emitter Voltage	V_{GES}	$T_J=25$	20	V
Total Power Dissipation	P_{tt}	$T_C=25$ $T_{jmax}=175$	227	W



		G	
Gate UL2V Gv	Threshold Voltage V _{GS}	10	V



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

Forward Voltage	V_F	$I_F=40A, T_j=25$	190	225	V
		$I_F=40A, T_j=125$	190		
		$I_F=40A, T_j=150$	185		
Recovered Charge	Q_r	$I_F=40A$	415		μC
Peak Reverse Recovery Current	I_{RR}	$V_R=60V$ $-dI_F/dt=160A/\mu s$	42		A
Reverse Recovery Energy	E_{rr}	$T_j=25$	130		nJ
Recovered Charge	Q_r	$I_F=40A$	800		μC
		$V_R=60V$ $-dI_F/dt=160A/\mu s$	46		A
		$T_j=125$	238		nJ



MG40P12E1

Collector-Emitter Voltage	V_{CES}	$V_{GE}=0V, I_C=1mA, T_j=25$	120	V
Continuous Collector Current	I_C	$T_c=100, \text{typ } 175$	25	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	50	A
Gate-Emitter Voltage	V_{GES}	$T_j=25$	20	V
Total Power Dissipation		$T_c=100, \text{typ } 175$	166	W

Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=12mA, T_j=25$	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	$V_{CE(sat)}$	$I_C=25A, V_{GE}=15V, T_j=25$		190	230	V
		$I_C=25A, V_{GE}=15V, T_j=125$		220		
		$I_C=25A, V_{GE}=15V, T_j=150$		230		
Gate Charge	Q_g			021		nC
Input Capacitance	C_{iss}	$V_{CE}=25V, V_{GE}=0V$		160		rF
Reverse Transfer Capacitance	C_{res}	$f=1MHz, T_j=25C$		007		rF
Gate-Emitter Leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			100	nA
Turn-on Delay/line	$t_{(on)}$	$I_C=25A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_{\theta} = 18$ $T_j=25$		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

TurnonDelay/line	t_{on}		185	ns
Rise/line	t_r		43	ns
TurnoffDelay/line	t_{off}	$I_c=25A$	510	ns
Fall/line	t_f	$V_{CE}=600V$	120	ns
Energy Dissipation During Turnon/line	E_{on}	$R_{\theta}=18$	260	nJ
Energy Dissipation During Turnoff/line	E_{off}	$I_f=125$	200	nJ
SCData	I_c	$T_p=10s, V_{CE}=15V, I_f=150, V_{CEM}=120V$	135	A

RepetitivePeakReverseVoltage	V_{RRM}	$T_f=25$	120	V
ContinuousDCForwardCurrent	I_F		15	A
RepetitivePeakForwardCurrent	I_{FRM}	$t_p=1ns$	30	A
Rvalue	r_{θ}	$V_{CE}=15V, I_f=150, T_f=25$	480	As
		$V_{CE}=0, I_f=150, T_f=150$	420	

ForwardVoltage	V_F	$I_f=15A, T_f=25$	200	240	V
		$I_f=15A, T_f=125$	210		
		$I_f=15A, T_f=150$	210		
RecoveredCharge	Q_r	$I_f=15A$	110		μC
PeakReverseRecoveryCurrent	I_{rr}	$V_{CE}=600V$ $-d_f/d_t=50A/\mu s$	120		A
ReverseRecoveryEnergy	E_{rec}	$T_f=25$	030		nJ
RecoveredCharge	Q_r	$I_f=15A$	190		μC
PeakReverseRecoveryCurrent	I_{rr}	$V_{CE}=600V$ $-d_f/d_t=50A/\mu s$	140		A
ReverseRecoveryEnergy	E_{rec}	$T_f=125$	060		nJ



MG40P12E1

Repetitive Peak Reverse Voltage	V_{RRM}	$T_f=25$	160	V
Average Output Current 50kHz, sine wave	$I_{(AV)}$	$T_c=100$	50	A
Minimum RMS Current at Rectifier Output	I_{RSM}	$T_c=100$	60	A
Surge Forward Current	I_{SM}	$V_f=0, t_f=10ms, T_f=5$	300	A
Reverse		$t_r=0, t_f=10ms, T_f=5$	500	ns

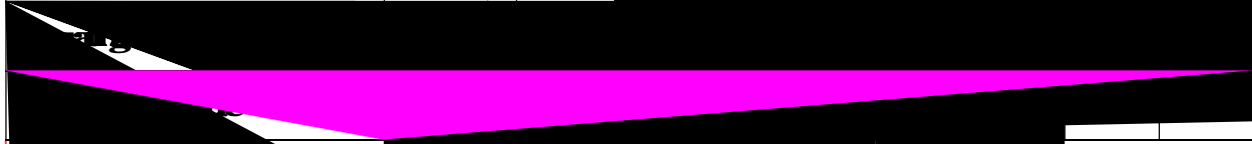
Diode Forward Voltage		$I_f=40A, T_f=125$	112	V
Reverse Current	I_r	$T_f=125, V_r=160V$	20	mA

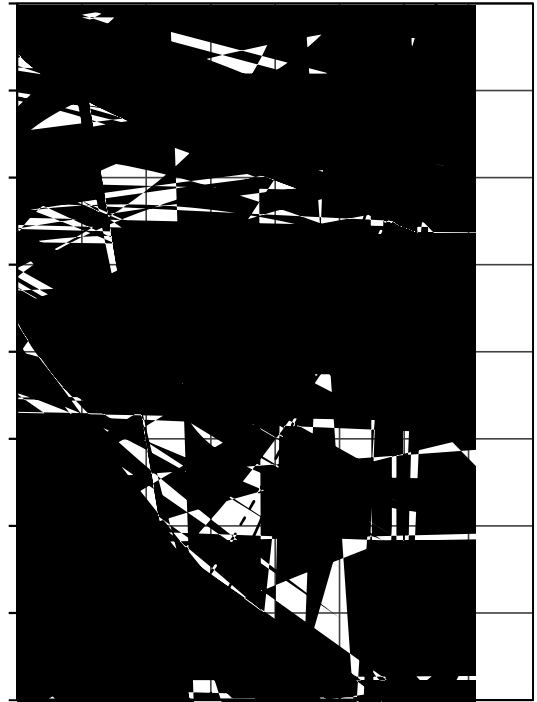
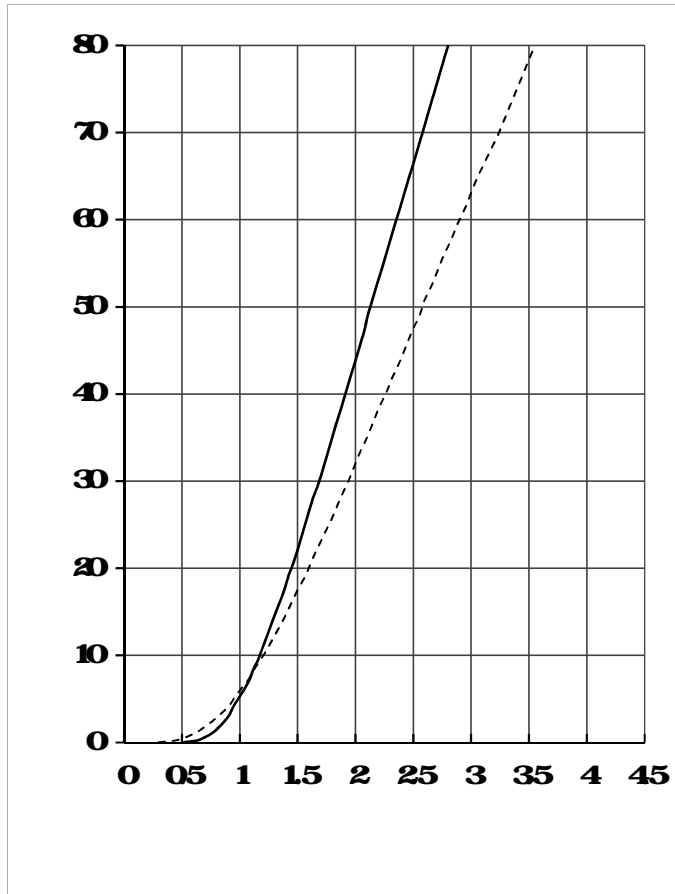
Rated Resistance	R_{θ}		50	k
Deviation of R100	RR	$T_c=100, R_{100}=483$	-5	5 %
Power Dissipation	P_{θ}			200 mW
B value	E_{500}	$R_{\theta} = R_{\theta} \exp(P_{500} / (T_c - 100))$	335	K



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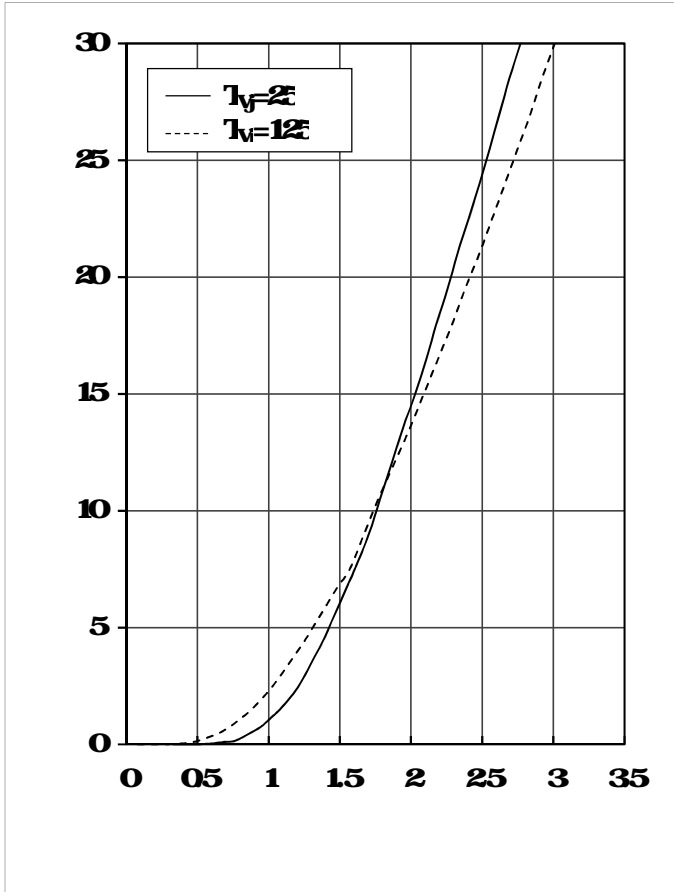
Isdalfondlage	V_{sd}	t_{inf} 50
Minimum Junction Temperature	T_{junction}	





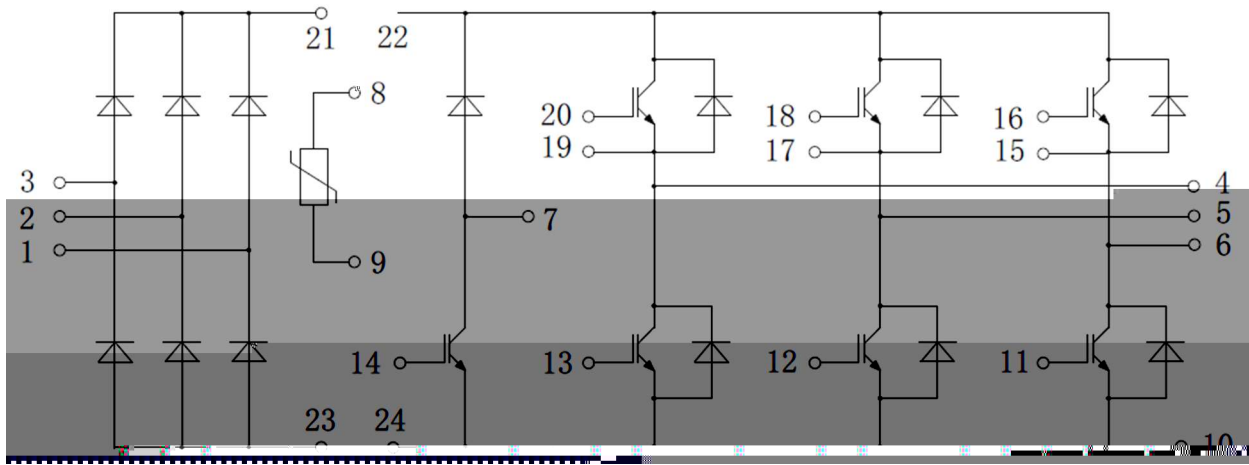


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Dimensions in Millimeters

