

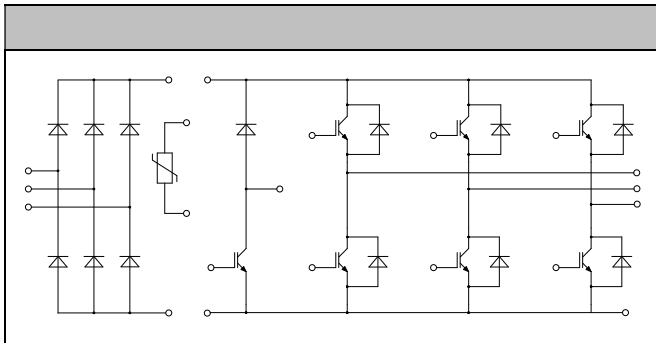


MG40P12E1



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
- Intrinsic fast & soft recovery anti-parallel FWD
- Low inductance case
- High short-circuit capability (10s)
- Maximum junction temperature 175°C



Collector-Emitter Voltage	V_{CE}	$V_{CE}=0V, I_C=1mA, T_J=25^\circ C$	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_{GE}	$T_J=25^\circ C$	± 20	V
Total Power Dissipation	P_{tot}	$T_C=25^\circ C$ $T_{Jmax}=175^\circ C$	227	W



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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	nA	
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		rF	
Reverse Transfer Capacitance	C_{es}	$f=1MHz, T_j=25C$		010		rF	
Gate-Emitter leakage current	I_{GS}	$V_{CE}=0V, V_{GE}=20V, T_j=25C$			40	nA	
Turn-on Delay/line	t_{on}	$I_C=4A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=13$ $T_j=25C$		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}		$I_C=4A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=13$ $T_j=125C$		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	



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

Forward Voltage	V_F	$I_F=40A, T_j=25^{\circ}C$	190	225	V
		$I_F=40A, T_j=125^{\circ}C$	190		
		$I_F=40A, T_j=150^{\circ}C$	185		
Recovered Charge	Q_r	$I_F=40A$	415		μC
Peak Reverse Recovery Current	I_{RR}	$V_R=60V$ $-dI/dt=160A/\mu s$	42		A
Reverse Recovery Energy	E_{rr}	$T_j=25^{\circ}C$	130		nJ
Recovered Charge	Q_r	$I_F=40A$	800		μC
		$V_R=60V$ $-dI/dt=160A/\mu s$	46		A
		$T_j=125^{\circ}C$	23		nJ



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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		$T_C=25C, T_{jmax}=175C$	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		μC
Input Capacitance	C_{iss}	$V_{CE}=25V, V_{GE}=0V,$ $f=1MHz, T_j=25C$		160		pF
Reverse Transfer Capacitance	C_{res}			007		pF
Gate-Emitter Leakage current	I_{GES}	$V_{GE}=0V, V_{CE}=20V, T_j=25C$			100	nA
Turn-on Delay/line	$t_{(on)}$	$I_C=25A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_{\theta} = 18$ $T_j=25C$		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



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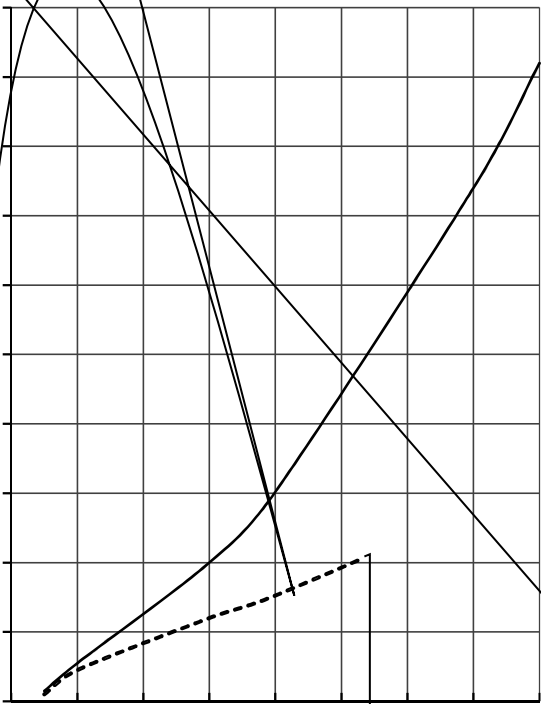
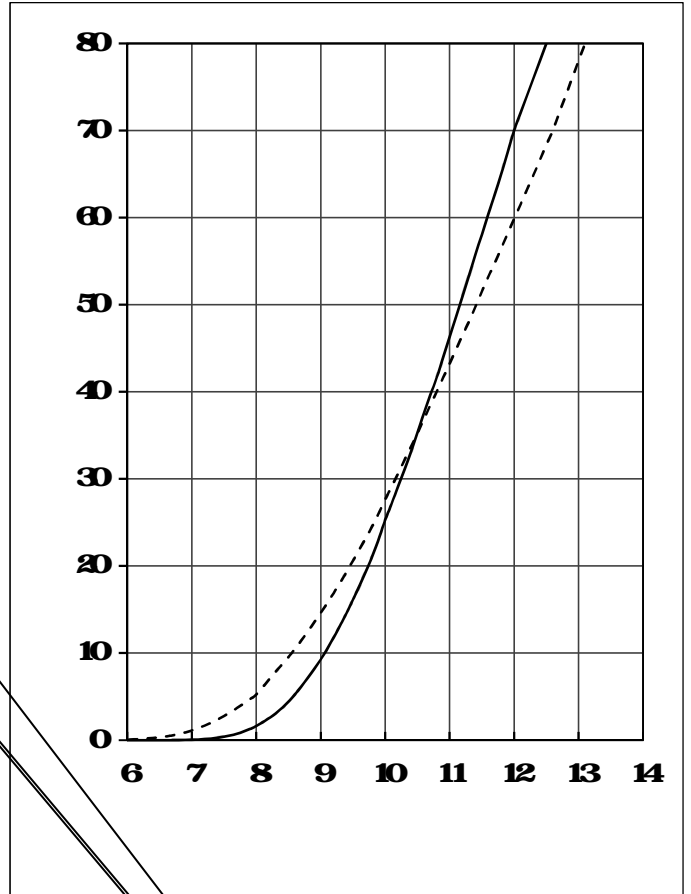
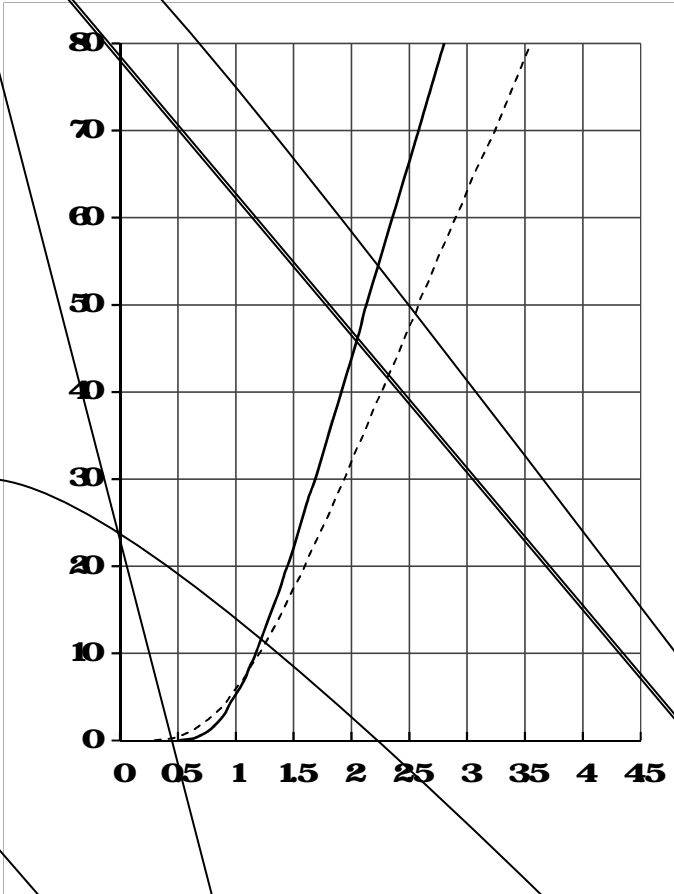
TurnonDelay/line	t_{on}		185	ns
Rise/line	t_r		43	ns
TurnoffDelay/line	t_{off}	$I_c=25A$	510	ns
Fall/line	t_f	$V_{CE}=600V$	120	ns
Energy Dissipation During Turnon/line	E_{on}	$R_{\theta}=18$	260	nJ
Energy Dissipation During Turnoff/line	E_{off}	$T_j=125C$	200	nJ
SCData	I_c	$T_p=10s, V_{CE}=15V, T_j=150C,$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

RepetitivePeakReverseVoltage	V_{RM}	$T_j=25C$	120	V
ContinuousDCForwardCurrent	I_F		15	A
RepetitivePeakForwardCurrent	I_{RM}	$t_p=1ns$	30	A
Rvalue	r_{θ}	$V_{CE}=15V, T_p=10ns, T_j=125C$	480	A\cdots
		$V_{CE}=0V, T_p=10ns, T_j=150C$	420	

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

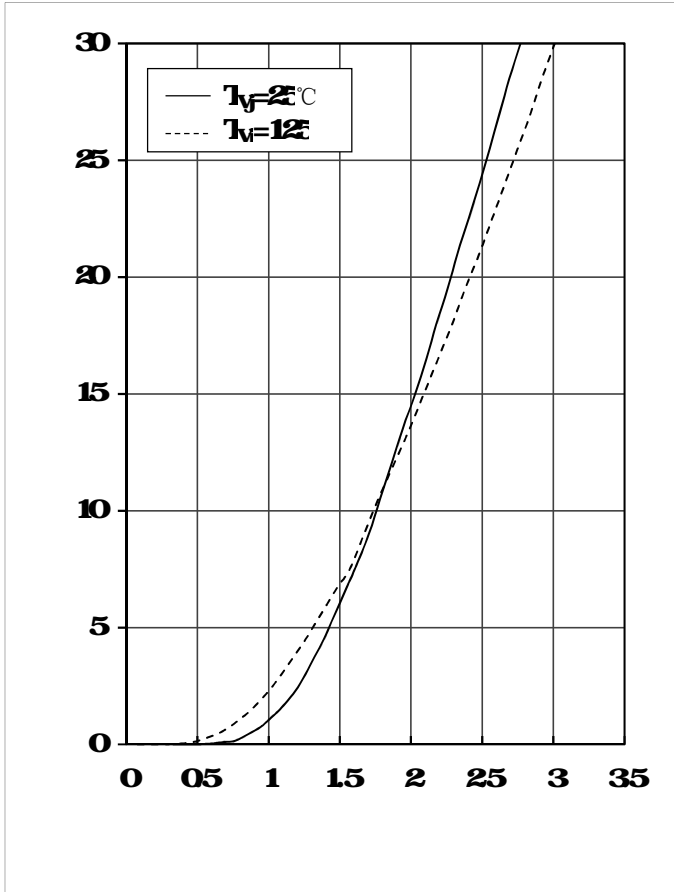


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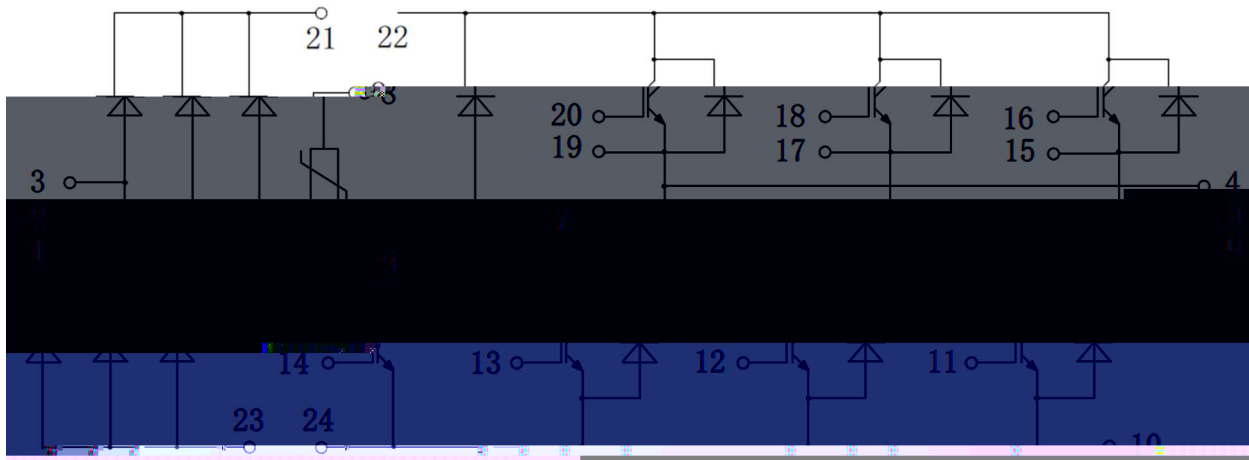


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Dimensions in Millimeters

