

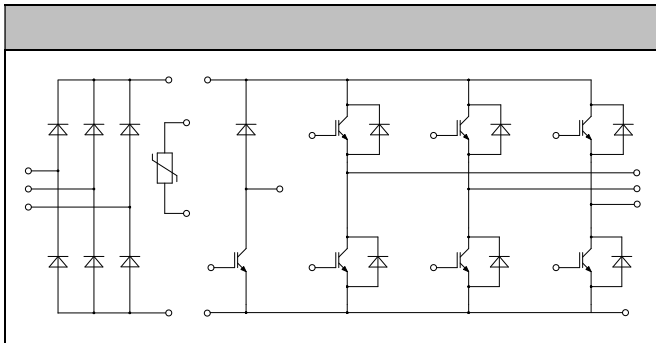


MG40P12E1



120V
40A

MicroDives
AC and DC servo drive amplifier
UPS (Uninterruptible Power Supplies)



Low switching losses
Low $V_{CE(sat)}$ with positive temperature coefficient
Inductive 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	V _{th}	V _{th}	V
	I _{ss}	10	



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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
Peak Reverse Recovery Current	I_{RR}	$V_R=60V$ $-dI_F/dt=160A/\mu s$	46		A
Reverse Recovery Energy	E_{rr}	$T_j=125$	238		nJ



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Collector-Emitter Voltage	V_{CES}	$V_{GE}=0V, I_C=1mA, T_j=25$	120	V
Continuous Collector Current	I_C	$T_c=100, \psi_{jmc}=175$	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		$T_c=100, \psi_{jmc}=175$	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		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}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			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



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TurnonDelay/line	t_{on}	$I_C=25A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_{\theta}=18$ $T_J=125$	185	ns
Rise/line	t_r		43	ns
TurnoffDelay/line	t_{off}		510	ns
Fall/line	t_f		120	ns
Energy Dissipation During Turnon/line	E_{on}		260	nJ
Energy Dissipation During Turnoff/line	E_{off}		200	nJ
SCData	I_C		$T_p=10s, V_{CE}=15V, T_J=150$, $V_{GE}=\pm 15V, V_{CEM} 120V$	135

RepetitivePeakReverseVoltage	V_{RRM}	$T_J=25$	120	V
ContinuousDCForwardCurrent	I_F		15	A
RepetitivePeakForwardCurrent	I_{FRM}	$t_p=1ns$	30	A
Rvalue	r_{θ}	$V_{CE}=15V, T_p=10ns, T_J=125$	480	A@s
		$V_{CE}=0V, T_p=10ns, T_J=150$	420	

ForwardVoltage	V_F	$I_F=15A, T_J=25$ $I_F=15A, T_J=125$ $I_F=15A, T_J=150$	200	240	V
RecoveredCharge	Q_r	$I_F=15A$	110		μC
PeakReverseRecoveryCurrent	I_{RR}	$V_{CE}=60V$ $-d_f/d_r=50A/\mu s$	120		A
ReverseRecoveryEnergy	E_{rec}	$T_J=25$	030		nJ
RecoveredCharge	Q_r	$I_F=15A$	190		μC
PeakReverseRecoveryCurrent	I_{RR}	$V_{CE}=60V$ $-d_f/d_r=50A/\mu s$	140		A
ReverseRecoveryEnergy	E_{rec}	$T_J=125$	060		nJ



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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	A

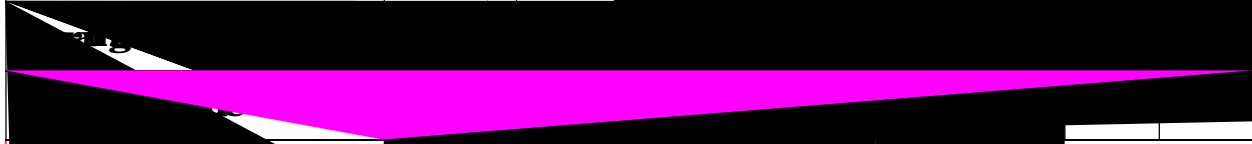
Diode Forward Voltage		$I_f=40A, T_f=125$	112	V
Reverse Current	I_r	$T_f=125, V_r=160V$	20	nA

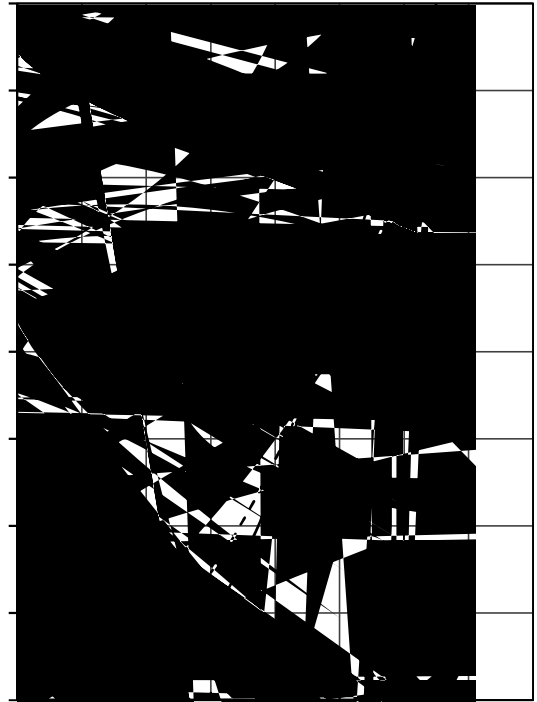
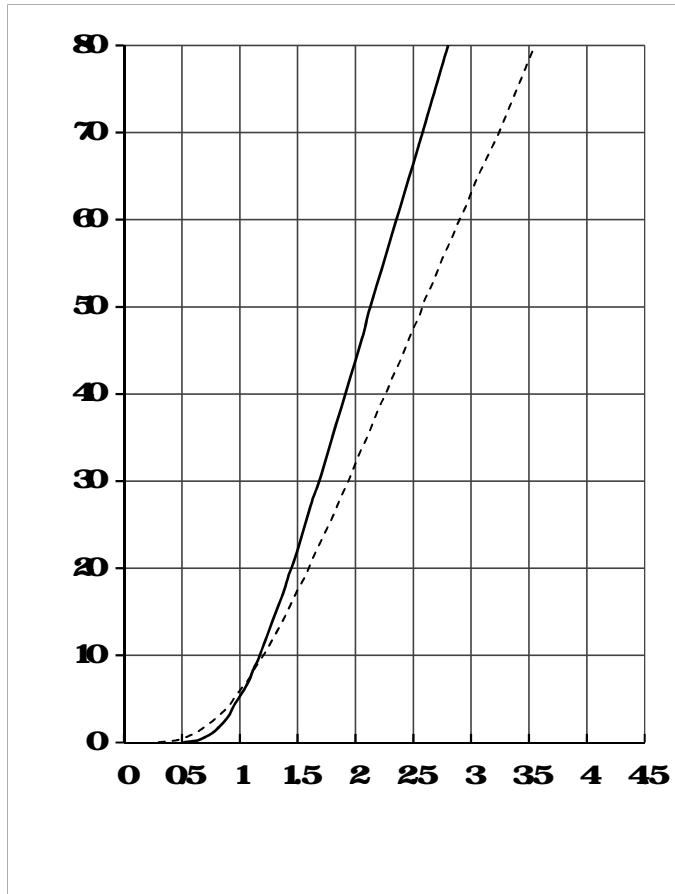
Rated Resistance	R_{θ}		50	k
Deviation of R100	RR	$T_c=100, R_{100}=483$	-5	5 %
Power Dissipation	P_{θ}		200	nW
B value	B_{500}	$R_{\theta} = R_{\theta} \exp\left(\frac{P_{500}}{10}\right) \left(\frac{1}{T_c} - \frac{1}{298.15}\right)$	335	K



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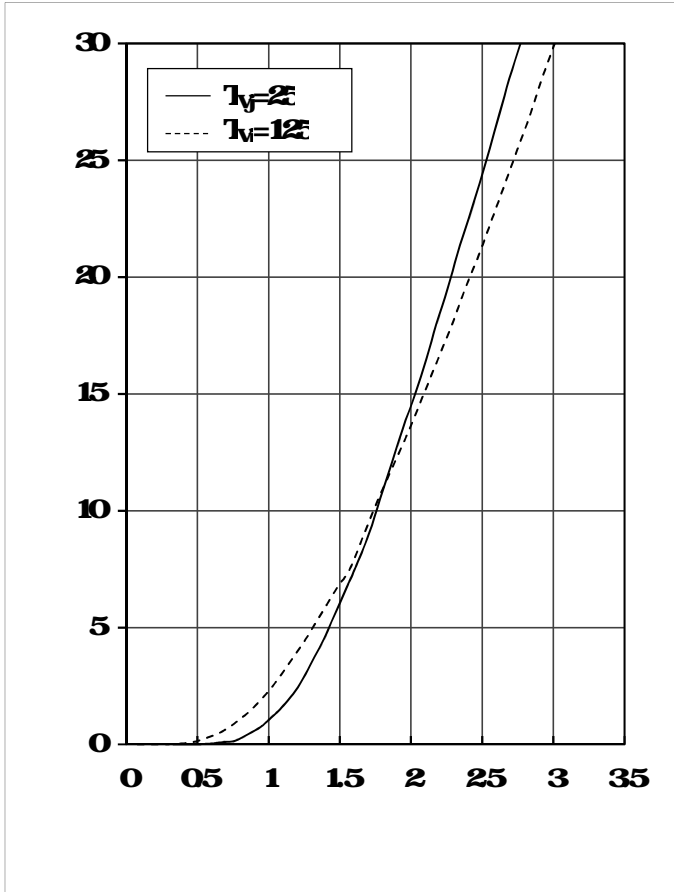
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Minimum Junction Temperature	T_{junction}	







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