



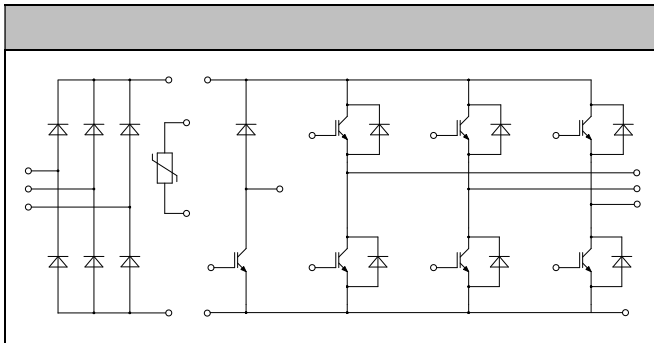
MG50P12E2



120V
50A



MicroDiodes
AC and DC semiconductor 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)
Minimum 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>	50	A
Repetitive Peak Collector Current	I_{CRM}	$t_p = 1ms$	100	A
Gate-Emitter Voltage	V_{GES}	$T_J = 25$	20	V
Total Power Dissipation	P_{tot}	$T_C = 25$ $T_{jmax} = 175$	288	W

Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=1.7A, T_j=25$	52	58	64	V	
Collector-Emitter Cut-off Current	I_{CS}	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	nA	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=50A, V_{GE}=15V, T_j=25$		190	230	V	
		$I_C=50A, V_{GE}=15V, T_j=125$		220			
		$I_C=50A, V_{GE}=15V, T_j=150$		230			
Gate Charge	Q_g			035		μC	
Input Capacitance	C_{is}	$V_{CE}=25V, V_{GE}=0V$		260		pF	
Reverse Transfer Capacitance	C_{es}	$f=1MHz, T_j=25C$		010		pF	
Gate-Emitter leakage current	I_{GS}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			40	nA	
Turn-on Delay/line	$t_{(on)}$	$I_C=50A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_{\theta}=15$ $T_j=25$		168		ns	
Rise time	t_r			31		ns	
Turn-off Delay/line	$t_{(off)}$			30		ns	
Fall time	t_f			78		ns	
Energy Dissipation During Turn-on line	E_{on}			542		nJ	
Energy Dissipation During Turn-off line	E_{off}			415		nJ	
Turn-on Delay/line	$t_{(on)}$		$I_C=50A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_{\theta}=15$ $T_j=125$		175		ns
Rise time	t_r				42		ns
Turn-off Delay/line	$t_{(off)}$				46		ns
Fall time	t_f				148		ns
Energy Dissipation During Turn-on line	E_{on}			726		nJ	
Energy Dissipation During Turn-off line	E_{off}			580		nJ	
SCData	I_C	$T_p=10s, V_{CE}=15V, T_j=150, V_C=90V, V_{CEM}=120V$		220		A	



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Repetitive Peak Reverse Voltage	V_{RRM}	$T_j=25$	120	V
Continuous DC Forward Current	I_F		50	A
Repetitive Peak Forward Current	I_{FRM}	$t_f=1ms$	100	A
R_{th(j-c)}	R_{th}	$V_f=0, t_f=10ms, T_j=125$	500	$^{\circ}C/W$
		$V_f=0, t_f=10ms, T_j=150$	400	

Forward Voltage	V_f	$I_F=50A, T_j=25$	210	250	V
		$I_F=50A, T_j=125$	215		
		$I_F=50A, T_j=150$	215		
Recovery Charge	Q_r	$I_F=50A$	58		μC
Peak Reverse Recovery Current	I_{RRM}	$V_f=60V$ $-di/dt=150A/\mu s$	50	50	A
Reverse Recovery Energy	E_{rr}	$T_j=25$	185		nJ

Collector-Emitter Voltage	V_{CES}	$V_{CE}=0V, I_C=1mA, T_j=25$	120	V
Continuous Collector Current	I_C	$T_C=100, \text{ max } 175$	35	A
Repetitive Peak Collector Current	I_{CRM}	$t_p=1ms$	70	A
Gate-Emitter Voltage	V_{GES}	$T_j=25$	20	V
Total Power Dissipation	P_{tot}	$T_C=25, T_{jmax}=175$	227	W

Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=14mA, T_j=25$	52	58	64	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	nA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=35A, V_{GE}=15V, T_j=25$		185	225	V
		$I_C=35A, V_{GE}=15V, T_j=125$		215		
		$I_C=35A, V_{GE}=15V, T_j=150$		225		
Gate Charge	Q_g			027		nC
Input Capacitance	C_{in}	$V_{CE}=25V, V_{GE}=0V$		200		nF
Reverse Transfer Capacitance	C_{res}	$f=1MHz, T_j=25C$		007		nF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			40	nA
Turn-on Delay/line	t_{on}	$I_C=35A, V_{CE}=60V, V_{GE}=\pm 15V, R_g=12, T_j=25$		25		ns
Rise time	t_r			13		ns
Turn-off Delay/line	t_{off}			21		ns
Fall time	t_f			115		ns
Energy Dissipation During Turn-on	E_{on}			190		nJ
Energy Dissipation During Turn-off	E_{off}			200		nJ





Repetitive Peak Reverse Voltage	V_{RRM}	$T_J=25$	160	V
Average Output Current 50kHz, sine wave	$I_{(AV)}$	$T_C=100$	65	A
Minimum RMS Current at Rectifier Output	I_{RSM}	$T_C=100$	110	A
Surge Forward Current	I_{SM}	$V_F=0, t_F=10ms, T_J=25$	850	A
Reverse Recovery Time	t_r	$V_F=0, t_F=10ms, T_J=25$	360	ns

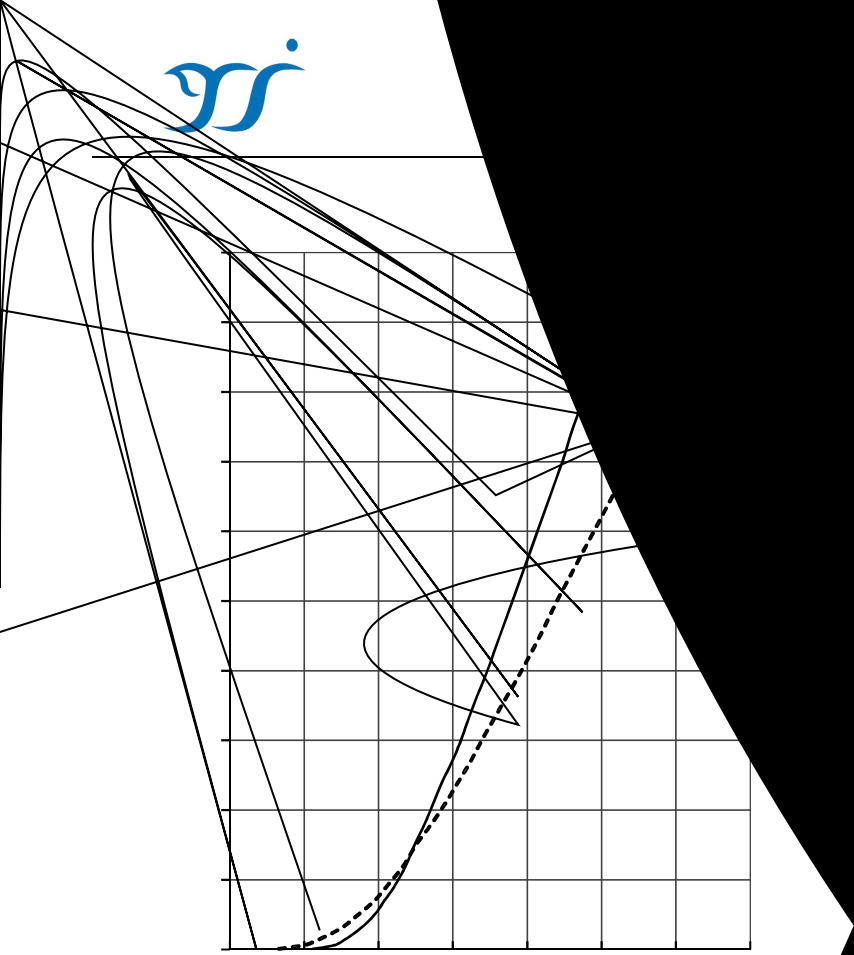
Diode Forward Voltage	V_F	$I_F=50A, T_J=125$	10	V
Reverse Current	I_R	$T_J=125, V_R=160V$	15	mA

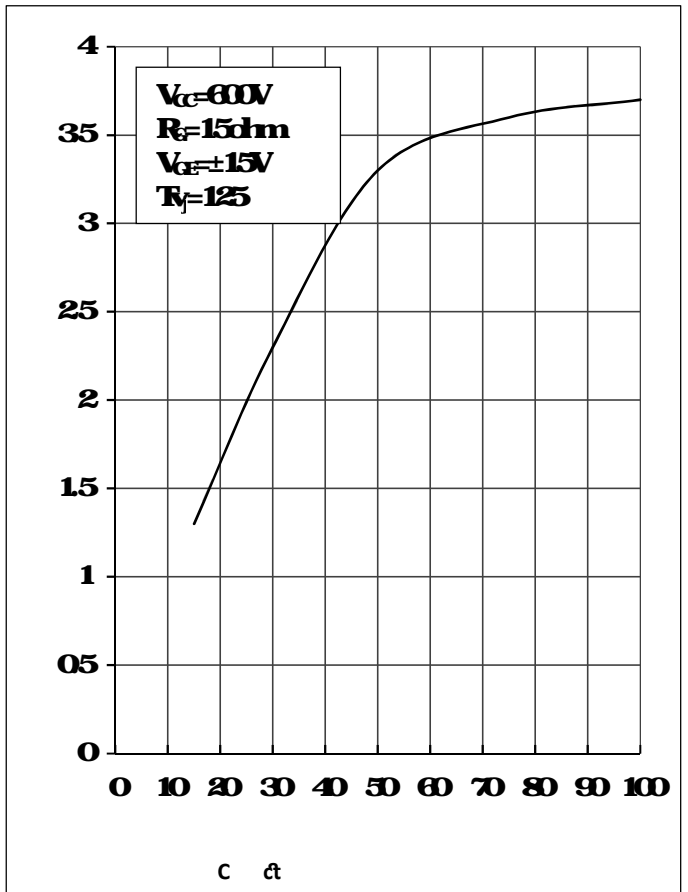
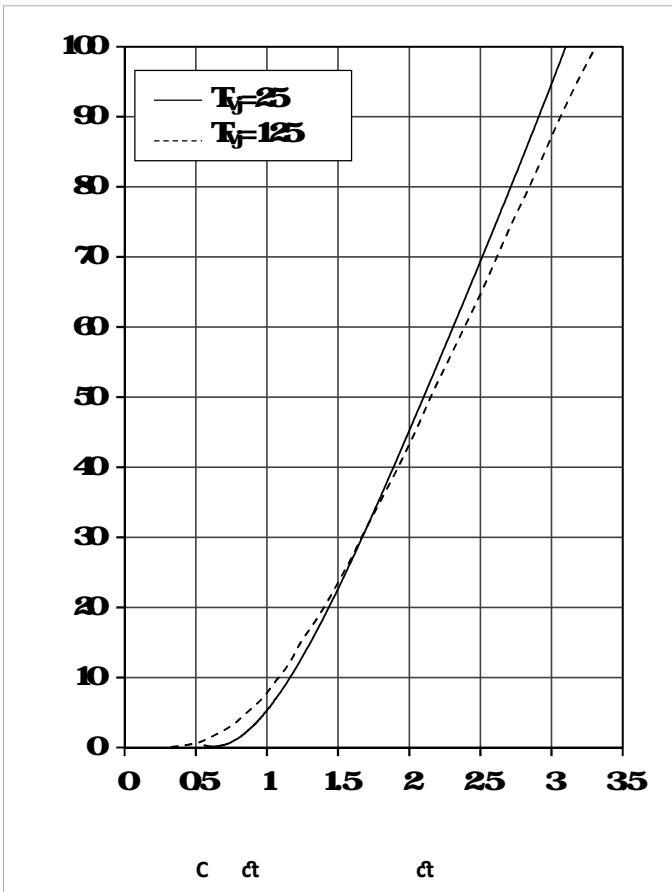
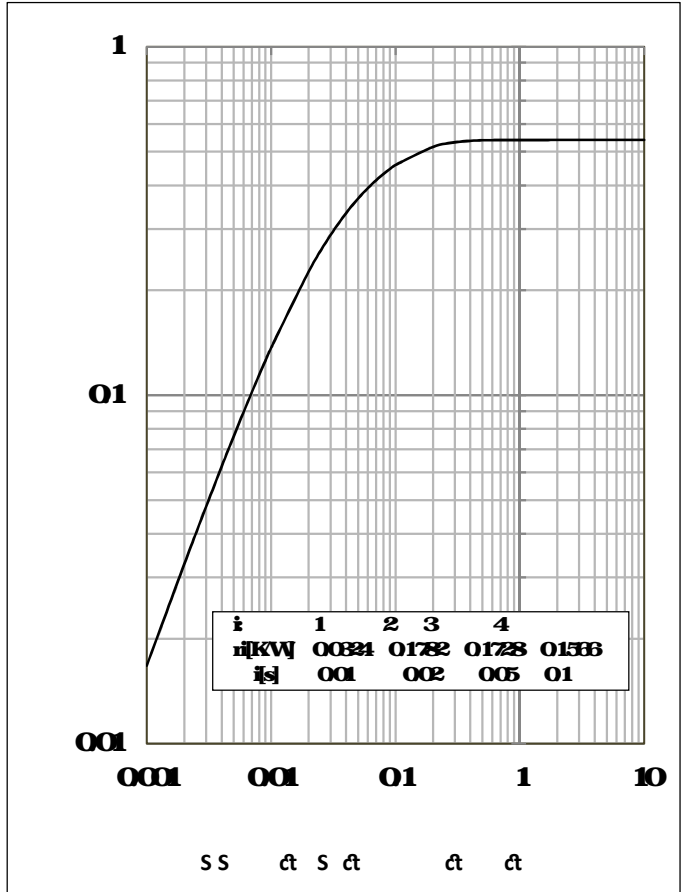
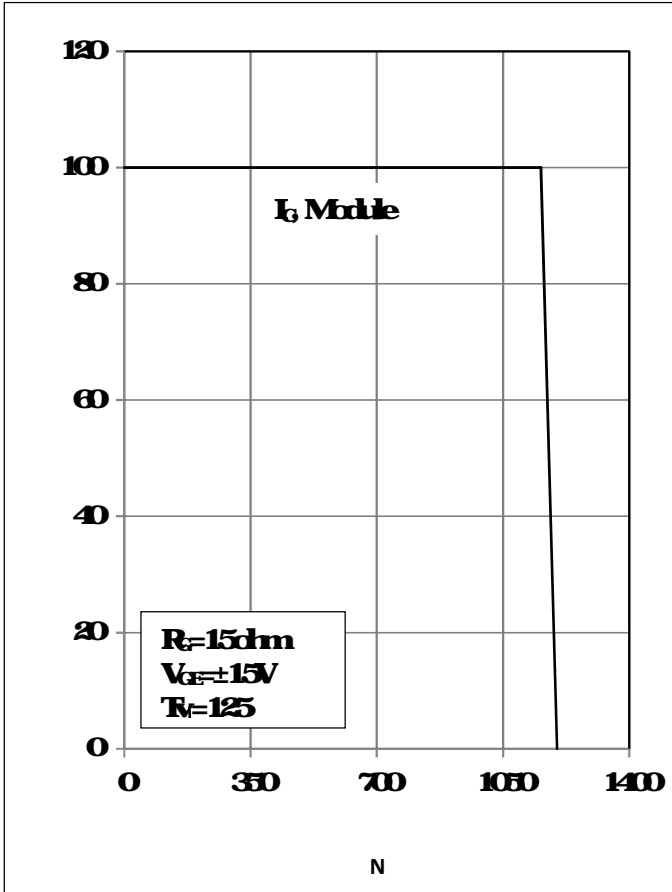
Rated Resistance	R_{θ}		50	k
Deviation of R100	RR	$T_C=100, R_{100}=483$	-5	5 %
Power Dissipation	P_{θ}			200 mW
Temperature Coefficient	$\alpha_{R_{\theta}}$	$R_{\theta} = R_{\theta 25} \exp[\alpha_{R_{\theta}}(T_C - 25)]$	335	K



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Isolation Voltage	V_{sd}	t=1min@50Hz	250			V
Minimum Junction Temperature □	T_{junction}				175	
Operating Junction Temperature	T_{jo}		-40		150	
Storage Temperature	T_{stg}		-40		125	
Storage Inductance	L_{sc}			6		
Module lead resistance, terminals dip	R_{case}	T_c=25 °C, per switch		40		
	R_{tab}			30		
Thermal Resistance Junction to Case	R_{jc}	per GBF in meter			052	KW
		per Dole in meter			081	
		per GBF bare copper			066	
		per Dole copper			150	
		per Dole solder			061	
Thermal Resistance Case to Sink	R_{cs}	per GBF in meter		029		KW
		per Dole in meter		044		
		per GBF bare copper		032		
		per Dole copper		033		
		per Dole solder		070		
		per Module		009		
Mating Force Per Clamp	F		30		60	N
Weight of Module	G			300		g







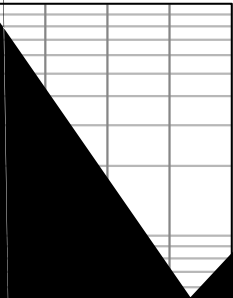
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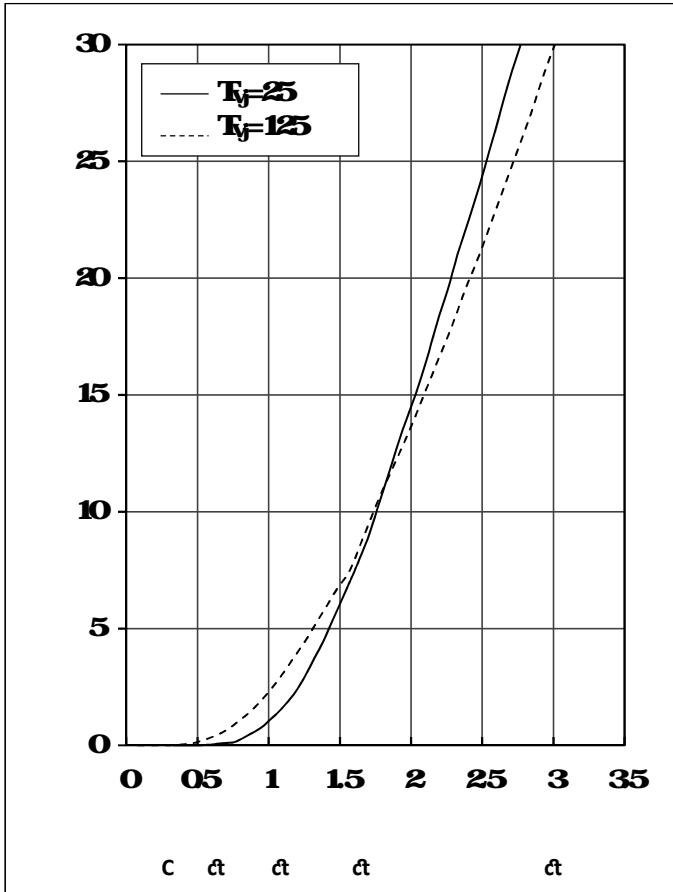
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