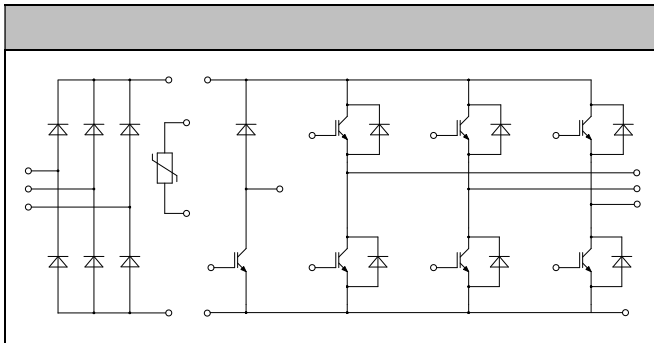




**120V**  
**100A**

**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**

<b>Collector-Emitter Voltage</b>	<b><math>V_{CES}</math></b>	<b><math>V_{CE}=0V, I_C=10A, T_J=25</math></b>	<b>120</b>	<b>V</b>
<b>Continuous Collector Current</b>	<b><math>I_C</math></b>	<b><math>T_C=80</math> <math>T_{Jmax}=175</math></b>	<b>100</b>	<b>A</b>
<b>Repetitive Peak Collector Current</b>	<b><math>I_{CM}</math></b>	<b><math>t_p=1ms</math></b>	<b>200</b>	<b>A</b>
<b>Gate-Emitter Voltage</b>	<b><math>V_{GES}</math></b>	<b><math>T_J=25</math></b>	<b>20</b>	<b>V</b>
<b>Total Power Dissipation</b>	<b><math>P_{tot}</math></b>	<b><math>T_C=25</math> <math>T_{Jmax}=175</math></b>	<b>555</b>	<b>W</b>

<b>Gate-emitter Threshold Voltage</b>	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=33mA, T_j=25$	50	58	65	V	
<b>Collector-Emitter Cut-off Current</b>	$I_{CES}$	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	nA	
<b>Collector-Emitter Saturation Voltage</b>	$V_{CE(sat)}$	$I_C=10A, V_{GE}=15V, T_j=25$		185	225	V	
		$I_C=10A, V_{GE}=15V, T_j=125$		215			
		$I_C=10A, V_{GE}=15V, T_j=150$		225			
<b>Gate Charge</b>	$Q_g$			078		$\mu C$	
<b>Input Capacitance</b>	$C_{is}$	$V_{CE}=25V, V_{GE}=0V$		68		rF	
<b>Reverse Transfer Capacitance</b>	$C_{es}$	$f=1MHz, T_j=25C$		032		rF	
<b>Gate-Emitter leakage current</b>	$I_{GES}$	$V_{CE}=0V, V_{GE}=20V, T_j=25$			40	nA	
<b>Turn-on Delay/line</b>	$t_{(on)}$	$I_C=10A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $I_s=35A$ <b>Inductive Load</b>		160		ns	
<b>Rise time</b>	$t_r$				45		ns
<b>Turn-off Delay/line</b>	$t_{(off)}$				215		ns
<b>Fall time</b>	$t_f$				54		ns
<b>Energy Dissipation During Turn-on line</b>	$E_{on}$		$R_{\theta c}=56$ $T_j=25$		92		nJ
<b>Energy Dissipation During Turn-off line</b>	$E_{off}$				58		nJ
<b>Turn-on Delay/line</b>	$t_{(on)}$	$I_C=10A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $I_s=35A$ <b>Inductive Load</b>		180		ns	
<b>Rise time</b>	$t_r$				52		ns
<b>Turn-off Delay/line</b>	$t_{(off)}$				330		ns
<b>Fall time</b>	$t_f$				63		ns
<b>Energy Dissipation During Turn-on line</b>	$E_{on}$		$R_{\theta c}=56$ $T_j=125$		132		nJ
<b>Energy Dissipation During Turn-off line</b>	$E_{off}$				94		nJ
<b>SCData</b>	$I_C$	$T_p=10s, V_{CE}=15V, T_j=150, V_{CE}=90V, V_{CEM}=120V$		500		A	



<b>Repetitive Peak Reverse Voltage</b>	<b>V<sub>RRM</sub></b>	<b>T<sub>j</sub>=25</b>	<b>120</b>	<b>V</b>
<b>Continuous DC Forward Current</b>	<b>I<sub>F</sub></b>		<b>100</b>	<b>A</b>
<b>Repetitive Peak Forward Current</b>	<b>I<sub>FRM</sub></b>	<b>t<sub>F</sub>=1ms</b>	<b>200</b>	<b>A</b>
<b>Reverse</b>	<b>t<sub>r</sub></b>	<b>V<sub>r</sub>=0, t<sub>F</sub>=10ms, T<sub>j</sub>=25</b>	<b>150</b>	<b>ns</b>
		<b>V<sub>r</sub>=0, t<sub>F</sub>=10ms, T<sub>j</sub>=150</b>	<b>150</b>	

<b>Forward Voltage</b>	<b>V<sub>F</sub></b>	<b>I<sub>F</sub>=10A, T<sub>j</sub>=25</b>	<b>180</b>	<b>240</b>	<b>V</b>
		<b>I<sub>F</sub>=10A, T<sub>j</sub>=125</b>	<b>185</b>		
		<b>I<sub>F</sub>=10A, T<sub>j</sub>=150</b>	<b>185</b>		
<b>Recovered Charge</b>	<b>Q<sub>r</sub></b>	<b>I<sub>F</sub>=100A</b>	<b>88</b>		<b>µC</b>
<b>Peak Reverse Recovery Current</b>	<b>I<sub>r</sub></b>	<b>V<sub>r</sub>=60V</b> <b>-d<sub>F</sub>/d<sub>t</sub>=350A/µs</b>	<b>105</b>		<b>A</b>
<b>Reverse Recovery Energy</b>	<b>E<sub>rec</sub></b>	<b>T<sub>j</sub>=25</b>	<b>32</b>		<b>nJ</b>
<b>Recovered Charge</b>	<b>Q<sub>r</sub></b>	<b>I<sub>F</sub>=100A</b>	<b>162</b>		<b>µC</b>
<b>Peak Reverse Recovery Current</b>	<b>I<sub>r</sub></b>	<b>V<sub>r</sub>=60V</b> <b>-d<sub>F</sub>/d<sub>t</sub>=350A/µs</b>	<b>115</b>		<b>A</b>
<b>Reverse Recovery Energy</b>	<b>E<sub>rec</sub></b>	<b>T<sub>j</sub>=125</b>	<b>54</b>		<b>nJ</b>





# MG100P12E2

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<b>TurnonDelay/line</b>	$t_{on}$	$I_c=50A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_G=15$ $T_j=125$	<b>175</b>	<b>ns</b>
<b>Rise/line</b>	$t_r$		<b>42</b>	<b>ns</b>
<b>TurnoffDelay/line</b>	$t_{off}$		<b>46</b>	<b>ns</b>
<b>Fall/line</b>	$t_f$		<b>148</b>	<b>ns</b>
<b>Energy Dissipation During Turnon/line</b>	$E_{on}$		<b>726</b>	<b>nJ</b>
<b>Energy Dissipation During Turnoff/line</b>	$E_{off}$		<b>580</b>	<b>nJ</b>
<b>SCData</b>	$I_c$	$T_p=10\mu s, V_{CE}=15V, T_j=150$ , $V_{CE}=90V, V_{CEM} 120V$	<b>280</b>	<b>A</b>

<b>RepetitivePeakReverseVoltage</b>	$V_{RRM}$	$T_j=25$	<b>120</b>	<b>V</b>
<b>ContinuousDCForwardCurrent</b>	$I_F$		<b>35</b>	<b>A</b>
<b>RepetitivePeakForwardCurrent</b>	$I_{FRM}$	$t_p=1ns$	<b>70</b>	<b>A</b>
<b>Rvalue</b>	$R_{\theta}$	$V_{CE}=0, t_p=10ns, T_j=125$	<b>20</b>	<b>As</b>
		$V_{CE}=0, t_p=10ns, T_j=150$	<b>20</b>	

<b>ForwardVoltage</b>	$V_F$	$I_F=35A, T_j=25$ $I_F=35A, T_j=125$ $I_F=35A, T_j=150$	<b>195</b> <b>195</b> <b>190</b>	<b>V</b>
<b>RecoveredCharge</b>	$Q_r$	$I_F=35A$	<b>415</b>	<b>uC</b>
<b>PeakReverseRecoveryCurrent</b>	$I_{rr}$	$V_{CE}=60V$ $-d_f/d=160A/\mu s$	<b>42</b>	<b>A</b>
<b>ReverseRecoveryEnergy</b>	$E_{rec}$	$T_j=25$	<b>130</b>	<b>nJ</b>
<b>RecoveredCharge</b>	$Q_r$	$I_F=35A$	<b>800</b>	<b>uC</b>
<b>PeakReverseRecoveryCurrent</b>	$I_{rr}$	$V_{CE}=60V$ $-d_f/d=160A/\mu s$	<b>46</b>	<b>A</b>
<b>ReverseRecoveryEnergy</b>	$E_{rec}$	$T_j=125$	<b>238</b>	<b>nJ</b>



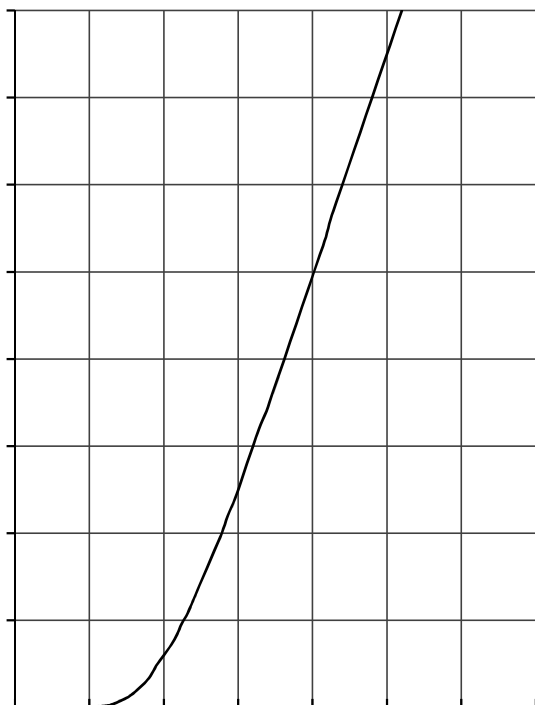
<b>Repetitive Peak Reverse Voltage</b>	<b><math>V_{RRM}</math></b>	<b><math>T_J=25</math></b>	<b>160</b>	<b>V</b>
<b>Average Output Current 50kHz, sine wave</b>	<b><math>I_{(AV)}</math></b>	<b><math>T_C=100</math></b>	<b>80</b>	<b>A</b>
<b>Minimum RMS Current at Rectifier Output</b>	<b><math>I_{RSM}</math></b>	<b><math>T_C=100</math></b>	<b>120</b>	<b>A</b>
<b>Surge Forward Current</b>	<b><math>I_{SM}</math></b>	<b><math>V_F=0, t_F=10ms, T_J=25</math></b>	<b>1100</b>	<b>A</b>
<b>ft value</b>	<b>ft</b>	<b><math>V_F=0, t_F=10ms, T_J=25</math></b>	<b>600</b>	<b>ns</b>

<b>Diode Forward Voltage</b>	<b><math>V_F</math></b>	<b><math>I_F=50A, T_J=125</math></b>	<b>0.98</b>		<b>V</b>
<b>Reverse Current</b>	<b><math>I_R</math></b>	<b><math>T_J=125, V_R=160V</math></b>		<b>20</b>	<b>nA</b>

<b>Rated Resistance</b>	<b><math>R_Z</math></b>		<b>50</b>		<b>k</b>
<b>Deviation of R100</b>	<b>RR</b>	<b><math>T_C=100, R_{100}=483</math></b>	<b>-5</b>	<b>5</b>	<b>%</b>
<b>Power Dissipation</b>	<b><math>P_Z</math></b>			<b>200</b>	<b>nW</b>
<b>B value</b>	<b><math>B_{500}</math></b>	<b><math>R_Z = R_Z \exp(B_{500} (1/T_C - 1/298.15))</math></b>	<b>335</b>		<b>K</b>

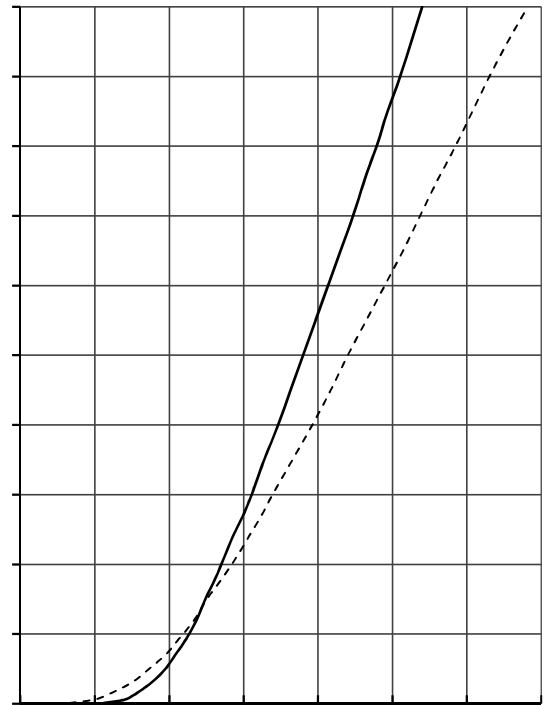
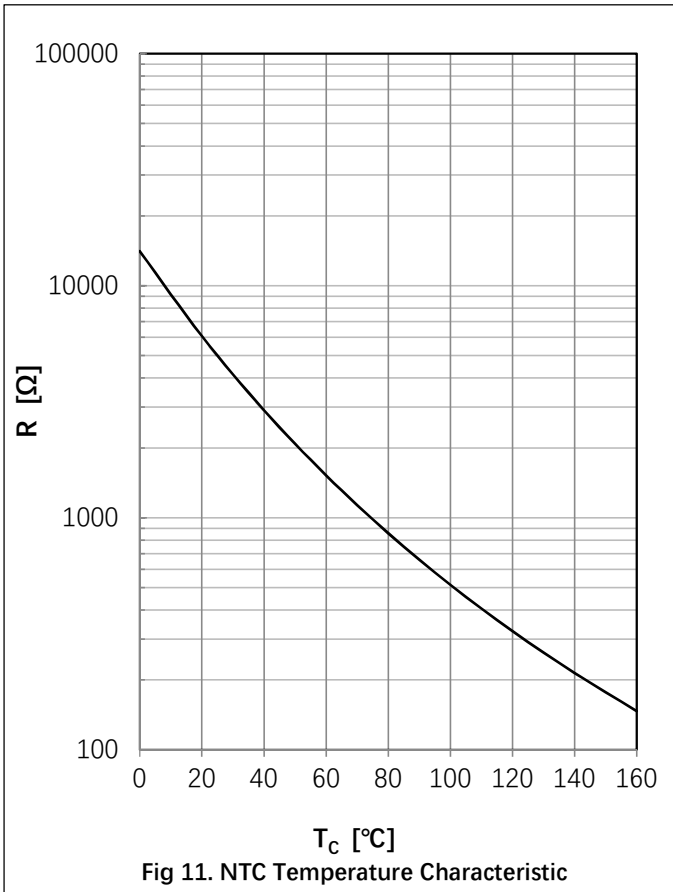
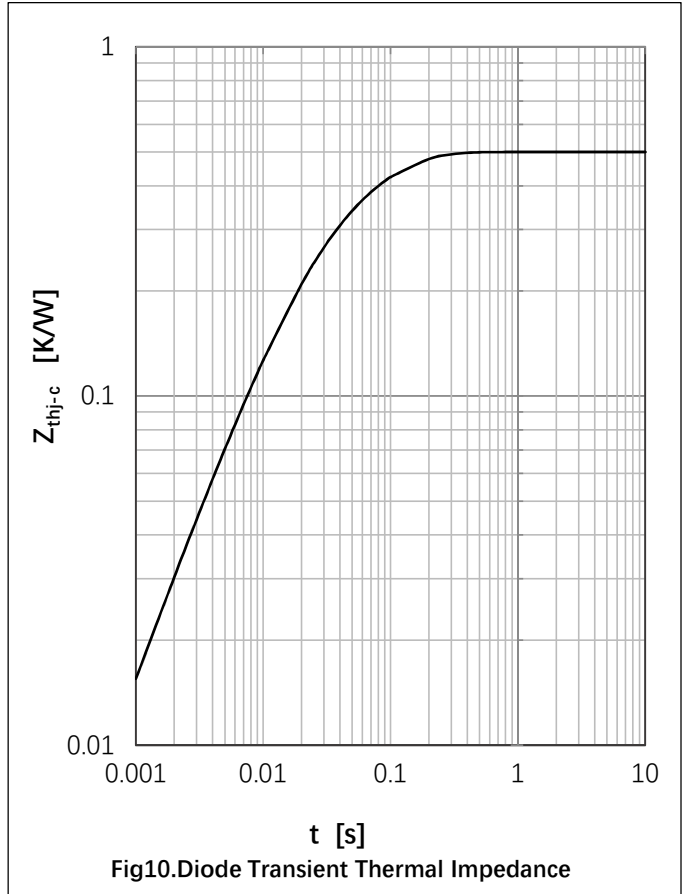
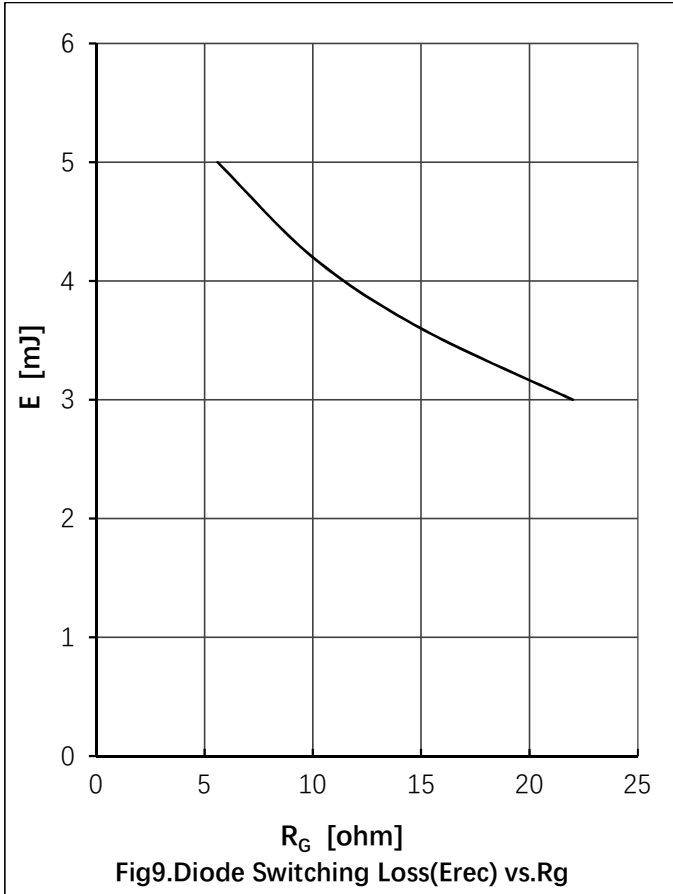


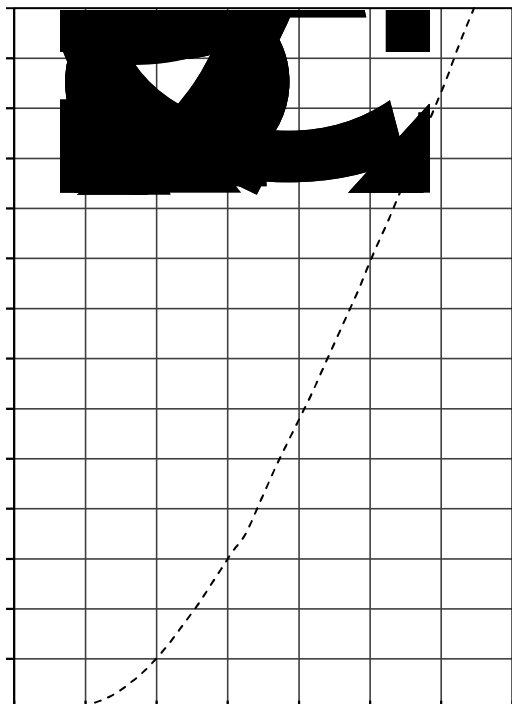
<b>Isolation Voltage</b>	<b>V<sub>sd</sub></b>	<b>t=1min, f=50Hz</b>	<b>250</b>			<b>V</b>
<b>Minimum Junction Temperature</b>	<b>T<sub>junction</sub></b>				<b>175</b>	
<b>Operating Junction Temperature</b>	<b>T<sub>jqop</sub></b>		<b>-40</b>		<b>150</b>	
<b>Storage Temperature</b>	<b>T<sub>stg</sub></b>		<b>-40</b>		<b>125</b>	
<b>Staying inductance enable</b>	<b>I<sub>SCE</sub></b>			<b>60</b>		
<b>Module lead resistance, terminals dip</b>	<b>R<sub>CEEE</sub></b>	<b>T<sub>c</sub>=25, per switch</b>		<b>40</b>		
	<b>R<sub>MLCC</sub></b>			<b>30</b>		
<b>Thermal Resistance Junction to Case</b>	<b>R<sub>JC</sub></b>	<b>per GBF in meter</b>			<b>027</b>	<b>KW</b>
		<b>per Dole in meter</b>			<b>050</b>	
		<b>per GBF bare copper</b>			<b>034</b>	
		<b>per Dole copper</b>			<b>120</b>	
		<b>per Dole redifier</b>			<b>043</b>	
<b>Thermal Resistance Case to Sink</b>	<b>R<sub>CS</sub></b>	<b>per GBF in meter</b>		<b>012</b>		<b>KW</b>
		<b>per Dole in meter</b>		<b>022</b>		
		<b>per GBF bare copper</b>		<b>014</b>		
		<b>per Dole copper</b>		<b>056</b>		
		<b>per Dole redifier</b>		<b>019</b>		
		<b>per Module</b>		<b>009</b>		
<b>Mating Force Per Clamp</b>	<b>F</b>		<b>30</b>		<b>60</b>	<b>N</b>
<b>Weight of Module</b>	<b>G</b>			<b>300</b>		<b>g</b>











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