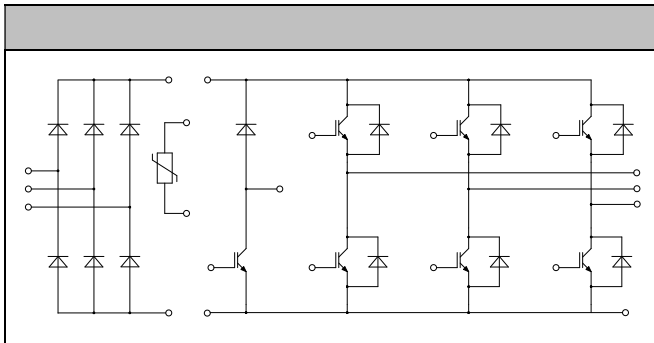




120V
100A

Mitsubishi
AC and DC speed 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	$T_C=80$ $T_{Jmax}=175$	100	A
Repetitive Peak Collector Current	I_{CM}	$t_p=1ms$	200	A
Gate-Emitter Voltage	V_{GES}	$T_J=25$	20	V
Total Power Dissipation	P_{tot}	$T_C=25$ $T_{Jmax}=175$	555	W

Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=33mA, T_j=25$	50	58	65	V	
Collector-Emitter Cut-off Current	I_{CS}	$V_{CE}=120V, V_{GE}=0V, T_j=25C$			10	nA	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10A, V_{GE}=15V, T_j=25$		185	225	V	
		$I_C=10A, V_{GE}=15V, T_j=125$		215			
		$I_C=10A, V_{GE}=15V, T_j=150$		225			
Gate Charge	Q_g			078		uC	
Input Capacitance	C_{is}	$V_{CE}=25V, V_{GE}=0V$		68		rF	
Reverse Transfer Capacitance	C_{es}	$f=1MHz, T_j=25C$		032		rF	
Gate-Emitter leakage current	I_{GS}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			40	nA	
Turn-on Delay/line	$t_{(on)}$	$I_C=10A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $I_s=35A$ Inductive Load $R_C=56$ $T_j=25$		160		ns	
Rise time	t_r			45		ns	
Turn-off Delay/line	$t_{(off)}$			215		ns	
Fall time	t_f			54		ns	
Energy Dissipation During Turn-on/line	E_{on}			92		nJ	
Energy Dissipation During Turn-off/line	E_{off}			58		nJ	
Turn-on Delay/line	$t_{(on)}$			180		ns	
Rise time	t_r			52		ns	
Turn-off Delay/line	$t_{(off)}$			330		ns	
Fall time	t_f			63		ns	
Energy Dissipation During Turn-on/line	E_{on}			132		nJ	
Energy Dissipation During Turn-off/line	E_{off}			94		nJ	
SCData	I_C		$T_p=10s, V_{CE}=15V, T_j=150, V_{CE}=300V, V_{CEM}=120V$		500		A

Repetitive Peak Reverse Voltage	V_{RRM}	$T_j=25$	120	V
Continuous DC Forward Current	I_F		100	A
Repetitive Peak Forward Current	I_{FRM}	$t_F=1ms$	200	A
R_{th(j-c)}	R_{th}	$V_F=0, t_F=10ms, T_j=125$	150	$^{\circ}C/W$
		$V_F=0, t_F=10ms, T_j=150$	150	

Forward Voltage	V_F	$I_F=10A, T_j=25$	180	240	V
		$I_F=10A, T_j=125$	185		
		$I_F=10A, T_j=150$	185		
Recovered Charge	Q_r	$I_F=10A$	88		μC
Peak Reverse Recovery Current	I_{rr}	$V_F=60V$ $-di/dt=300A/\mu s$	105		A
Reverse Recovery Energy	E_{rr}	$T_j=25$	32		nJ
Recovered Charge	Q_r	$I_F=10A$	162		μC
Peak Reverse Recovery Current	I_{rr}	$V_F=60V$ $-di/dt=300A/\mu s$	115		A
Reverse Recovery Energy	E_{rr}	$T_j=125$	54		nJ



Collector-Emitter Voltage	V_{CE}	$V_{CE} = 0V, I_C = 1mA, T_j = 25$		



TurnonDelay/line	t_{on}	$I_C=50A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_G=15$ $T_J=125$		175		ns
RiseTime	t_r			42		ns
TurnoffDelay/line	t_{off}			46		ns
FallTime	t_f			148		ns
Energy Dissipation During Turnon/line	E_{on}			726		nJ
Energy Dissipation During Turnoff/line	E_{off}			580		nJ
SCData	I_C	$T_P=10\mu s, V_{CE}=15V, T_J=150$, $V_{CE}=90V, V_{CEM} 120V$		280		A

RepetitivePeakReverseVoltage	V_{RRM}	$T_J=25$		120		V
ContinuousDCForwardCurrent	I_F			35		A
RepetitivePeakForwardCurrent	I_{FRM}	$t_p=1ns$		70		A
Rvalue	R_θ	$V_{CE}=0, t_p=10ns, T_J=125$		20		As
		$V_{CE}=0, t_p=10ns, T_J=150$		20		

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



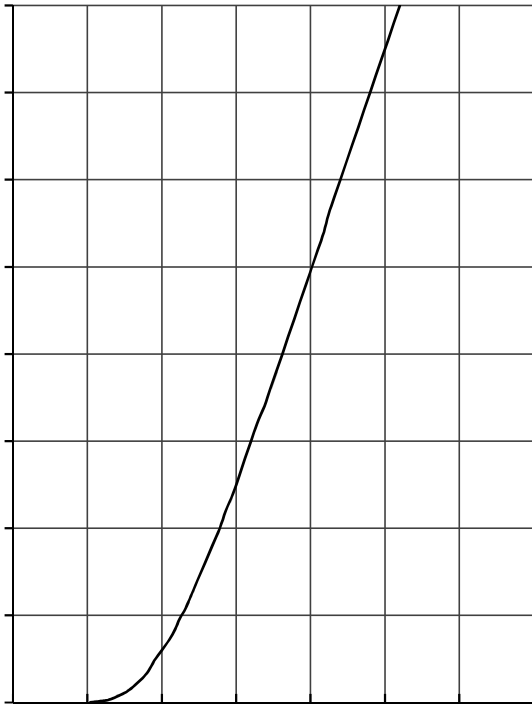
Repetitive Peak Reverse Voltage	V_{RRM}	$T_J=25$	160	V
Average Output Current 50kHz, sine wave	$I_{(AV)}$	$T_C=100$	80	A
Minimum RMS Current at Rectifier Output	I_{RSM}	$T_C=100$	120	A
Surge Forward Current	I_{SM}	$V_F=0, t_F=10ms, T_J=25$	1100	A
ft value	f_t	$V_F=0, t_F=10ms, T_J=25$	600	ns

Diode Forward Voltage	V_F	$I_F=50A, T_J=125$	0.98	V
Reverse Current	I_R	$T_J=125, V_R=160V$	20	nA

Rated Resistance	R_Z		50	k
Deviation of R100	RR	$T_C=100, R_{100}=483$	-5	5 %
Power Dissipation	P_Z			200 mW
B value	B_{330}	$R_Z = R_{Z0} \exp[B_{330} (1/T_Z - 1/298.15 K)]$	335	K



Isolation Voltage	V_{sd}	t=1min@50Hz	250			V
Minimum Junction Temperature	T_{junction}				175	
Operating Junction Temperature	T_{jq}		-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_{lead}			30		
Thermal Resistance Junction to Case	R_{jc}	per GBT in meter			027	KW
		per Diode in meter			050	
		per GBT base copper			034	
		per Diode copper			120	
		per Diode solder			043	
Thermal Resistance Case to Sink	R_{cs}	per GBT in meter		012		KW
		per Diode in meter		022		
		per GBT base copper		014		
		per Diode copper		056		
		per Diode solder		019		
		per Module		009		
Mating Force Per Clamp	F		30		60	N
Weight of Module	G			300		g





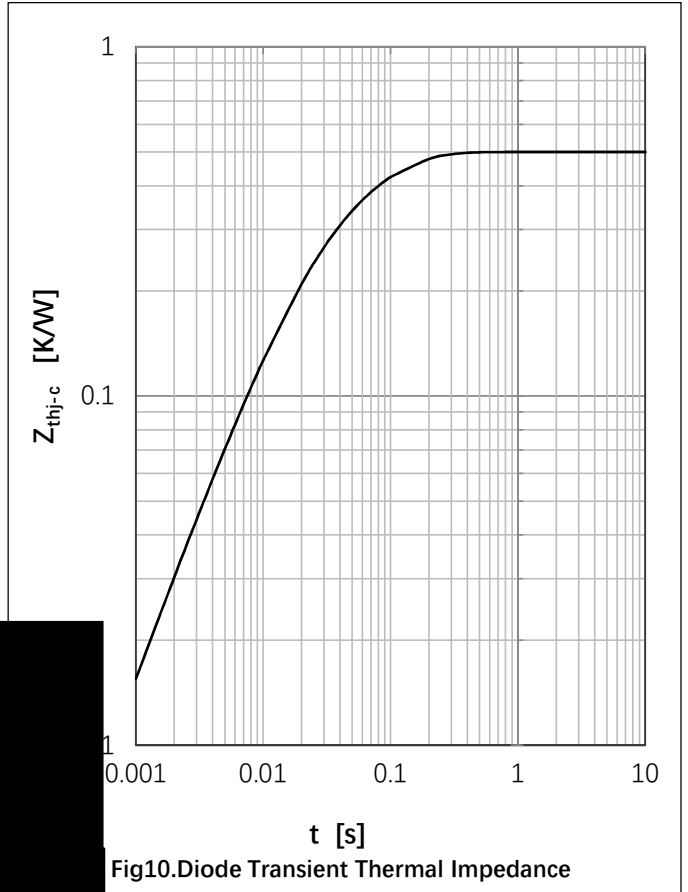
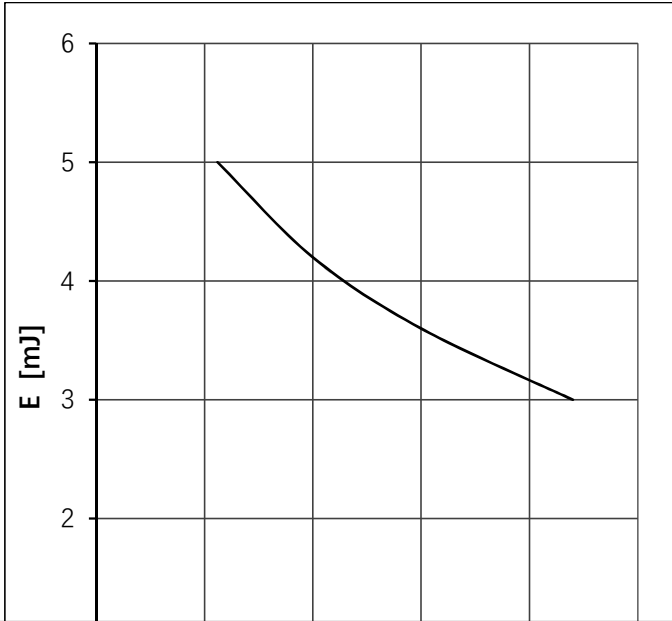


Fig10.Diode Transient Thermal Impedance

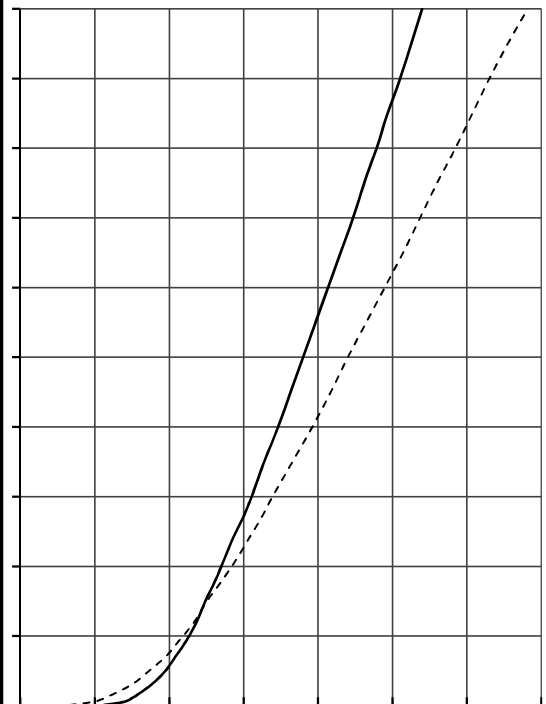


Fig 11. NTC Temperature Characteristic

