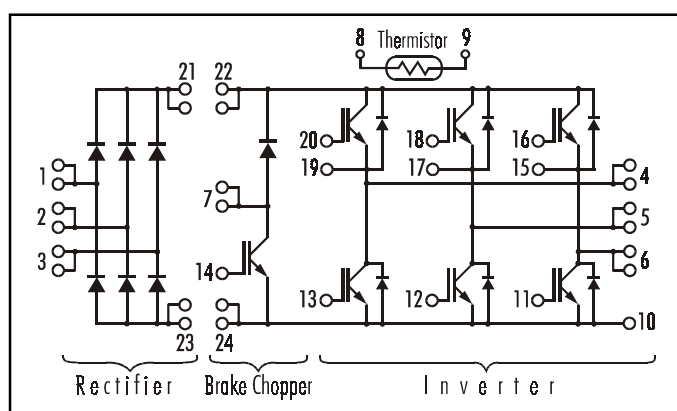


Power Integrated Module (PIM)

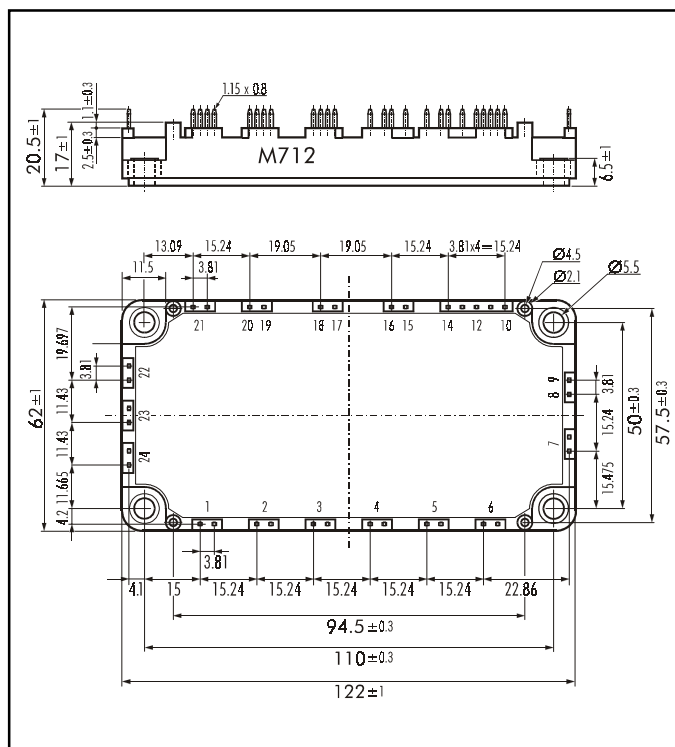
■ Features

- PT-Technology
- Solderable Package
- High Short Circuit Withstand-Capability
- Small Temperature Dependence of the Turn-Off Switching Loss
- Low Losses And Soft Switching

■ Equivalent Circuit



■ Outline Drawing

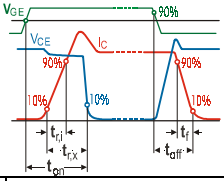


■ Absolute Maximum Ratings (T_c=25°C)

	Items	Symbols	Test Conditions	Ratings	Units
Inverter	Collector-Emitter Voltage	V _{CES}		600	V
	Gate -Emitter Voltage	V _{GES}		± 20	
	Collector Current	I _C	Continuous	100	A
		I _{C PULSE}	1ms	200	
		-I _{C PULSE}		100	
	Collector Power Dissipation	P _C	1 device	360	W
Rectifier	Repetitive Peak Reverse Voltage	V _{RRM}		800	V
	Average Output Current	I _O	50Hz/60Hz sinus wave	100	A
	Surge Current (Non Repetitive)	I _{FSM}	T _j =150°C, 10 ms, sinus wave	700	
	I ² t (Non Repetitive)			2450	A ² s
Brake Chopper	Collector-Emitter Voltage	V _{CES}		600	V
	Gate -Emitter Voltage	V _{GES}		± 20	
	Collector Current	I _C	Continuous	50	A
		I _{C PULSE}	1ms	100	
	Collector Power Dissipation	P _C	1 device	200	W
	Repetitive Peak Reverse Voltage	V _{RRM}		600	V
	Operating Junction Temperature	T _j		+150	°C
	Storage Temperature	T _{Stg}		-40 ~ +125	
	Isolation Voltage	V _{ISO}	A.C. 1min.	2500	V
	Mounting Screw Torque*			3.5	Nm

Note: *:Recommendable Value; 2.5 ~ 3.5 Nm (M5)

■ Electrical Characteristics($T_j=25^{\circ}\text{C}$)

	Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Inverter IGBT	Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0\text{V}$ $V_{CE}=600\text{V}$			1.0	mA
	Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0\text{V}$ $V_{GE}=\pm 20\text{V}$			200	nA
	Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=20\text{V}$ $I_C=100\text{mA}$	5.5	7.8	8.5	V
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15\text{V}$ $I_C = 100\text{A}$		1.8 2.15	2.6	
	Input Capacitance	C_{ies}	$f=1\text{MHz}$, $V_{GE}=0\text{V}$, $V_{CE}=10\text{V}$		10000		pF
	Turn-on Time	t_{on}	$V_{CC} = 300\text{V}$ $I_C = 100\text{A}$ $V_{GE} = \pm 15\text{V}$ $R_G = 24\Omega$ Inductive Load 		0.45	1.2	μs
		$t_{r,x}$			0.25	0.6	
		$t_{r,i}$			0.08		
	Turn-off Time	t_{off}			0.40	1.0	
		t_f			0.05	0.35	
FRD	Diode Forward On-Voltage	V_F	$I_F=100\text{A}$		1.6 1.95	2.7	V
	Reverse Recovery Time	t_{rr}	$I_F=100\text{A}$			300	ns
Rectifier	Forward Voltage	V_{FM}	$I_F=100\text{A}$		1.1 1.2	1.5	V
	Reverse Current	I_{RRM}	$V_R=800\text{V}$			1.0	mA
Brake Chopper	Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0\text{V}$ $V_{CE}=600\text{V}$			1.0	mA
	Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0\text{V}$ $V_{GE}=\pm 20\text{V}$			200	nA
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15\text{V}$ $I_C=50\text{A}$		1.80 2.05	2.5	V
	Turn-on Time	t_{on}	$V_{CC} = 300\text{V}$ $I_C = 50\text{A}$ $V_{GE} = \pm 15\text{V}$ $R_G = 51\Omega$		0.45	1.2	μs
		$t_{r,x}$			0.25	0.6	
	Turn-off Time	t_{off}			0.40	1.0	
		t_f			0.05	0.35	
	Reverse Current	I_{RRM}	$V_R=600\text{V}$			1.0	mA
NTC	Resistance	R	$T= 25^{\circ}\text{C}$ $T=100^{\circ}\text{C}$		5000 465	520	Ω
	B Value	B	$T=25 / 50^{\circ}\text{C}$	3305	3375	3450	K

■ Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance (1 device)	$R_{th(j-c)}$	Inverter IGBT			0.31	$^{\circ}\text{C/W}$
		Inverter FRD			0.70	
		Brake IGBT			0.63	
		Rectifier Diode			0.47	
Contact Thermal Resistance	$R_{th(c-f)}$	With Thermal Compound		0.05		

