

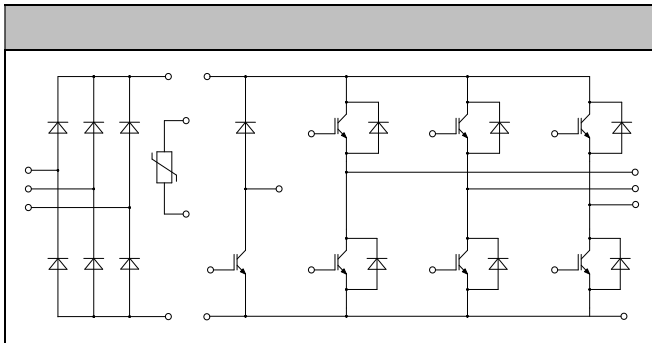


IGBT Modules

V_{CE(S)} 120V
I_C 15A

Applications

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



Features

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

IGBT- inverter

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Collector-Emitter Voltage	V_{CE(S)}	V_{GE}=0V, I_C=1mA, T_J=25	120	V
Continuous Collector Current	I_C	T_C=100, θ_{jmax} 175	15	A
Repetitive Peak Collector Current	I_{CM}	tp=1ms	30	A
Gate-Emitter Voltage	V_{GE(S)}	T_J=25	20	V
Total Power Dissipation	P_{tot}	T_C=25 T_{Jmax}=175	142	W



IGBT- inverter

Characteristic values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_c=0.5mA, T_j=25$	52	60	68	V
Collector-Emitter Cutoff Current	I_{CS}	$V_{CE}=120V, V_{GE}=0V, T_j=25$			10	mA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_c=15A, V_{GE}=15V, T_j=25$		185	220	V
		$I_c=15A, V_{GE}=15V, T_j=125$		215		
		$I_c=15A, V_{GE}=15V, T_j=150$		225		
Gate Charge	Q_g			015		μC
Input Capacitance	C_{is}	$V_{CE}=25V, V_{GE}=0V$		11		nF
Reverse Transfer Capacitance	C_{rs}	$f=1MHz, T_j=25$		004		nF
Gate-Emitter leakage current	I_{GS}	$V_{GE}=0V, V_{CE}=20V, T_j=25$			40	nA
Turnon Delay/line	t_{on}	$I_c=15A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=3\Omega$ $T_j=25$		90		ns
Rise time	t_r			61		ns
Turnoff Delay/line	t_{off}			180		ns
Fall time	t_f			135		ns
Energy Dissipation During Turnon/line	E_{on}			142		nJ
Energy Dissipation During Turnoff/line	E_{off}			078		nJ
Turnon Delay/line	t_{on}	$I_c=15A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=3\Omega$ $T_j=125$		95		ns
Rise time	t_r			70		ns
Turnoff Delay/line	t_{off}			260		ns
Fall time	t_f			180		ns
Energy Dissipation During Turnon/line	E_{on}			185		nJ
Energy Dissipation During Turnoff/line	E_{off}			113		nJ
SCData	I_c	$T_p=10\mu s, V_{GE}=15V, T_j=150, V_{CE}=90V, V_{CEM}=120V$		90		A



Diode-inverter

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_j=25$	120	V
Continuous DC Forward Current	I_F		15	A
Repetitive Peak Forward Current	I_{FRM}	$t_f=1ms$	30	A
Rt value	R_t	$V_F=0, t_f=10ms, T_j=125$	160	As
		$V_F=0, t_f=10ms, T_j=150$	140	

Characteristic values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=15A, T_j=25$		200	265	V
		$I_F=15A, T_j=125$		210		
		$I_F=15A, T_j=150$		210		
Recovered Charge	Q_r	$I_F=15A$		120		μC
Peak Reverse Recovery Current	I_{rr}	$V_F=60V$ $-d_F/dt=60A/\mu s$		130		A
Reverse Recovery Energy	E_{rr}	$T_j=25$		037		mJ
Recovered Charge	Q_r	$I_F=15A$		205		μC
Peak Reverse Recovery Current	I_{rr}	$V_F=60V$ $-d_F/dt=60A/\mu s$		120		A
Reverse Recovery Energy	E_{rr}	$T_j=125$		068		mJ



IGBT-brake-chopper

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Collector-Emitter Voltage	V_{CES}	$V_{GE}=0V, I_C=1mA, T_j=25$	120	V
Continuous Collector Current	I_C	$T_c=100, v_{jmax}=15$	15	A
Repetitive Peak Collector Current	I_{CM}	$t_p=1ms$	30	A
Gate-Emitter Voltage	V_{GES}	$T_j=25$	20	V
Total Power Dissipation	P_{tot}	$T_c=25, T_{jmax}=15$	15	W

Characteristic values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Gate-emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}, I_C=0.5mA, T_j=25$	52	60	68	V
Collector-Emitter Cut-off Current	I_{CES}	$V_{CE}=120V, V_{GE}=0V, T_j=25$			10	nA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=15A, V_{GE}=15V, T_j=25$		185	225	V
		$I_C=15A, V_{GE}=15V, T_j=125$		215		
		$I_C=15A, V_{GE}=15V, T_j=150$		225		
Gate Charge	Q_g			009		nC
Input Capacitance	C_{is}	$V_{CE}=25V, V_{GE}=0V$		135		rF
Reverse Transfer Capacitance	C_{res}	$f=1MHz, T_j=25$		008		rF
Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=20V, T_j=25$			40	nA
Turn-on Delay/line	t_{on}	$I_C=15A$ $V_{CE}=60V$ $V_{GE}=\pm 15V$ $R_g=3\Omega$ $T_j=25$		46		ns
Rise Time	t_r			45		ns
Turn-off Delay/line	t_{off}			182		ns
Fall Time	t_f			168		ns
Energy Dissipation During Turn-on	E_{on}			092		nJ
Energy Dissipation During Turn-off	E_{off}			056		nJ







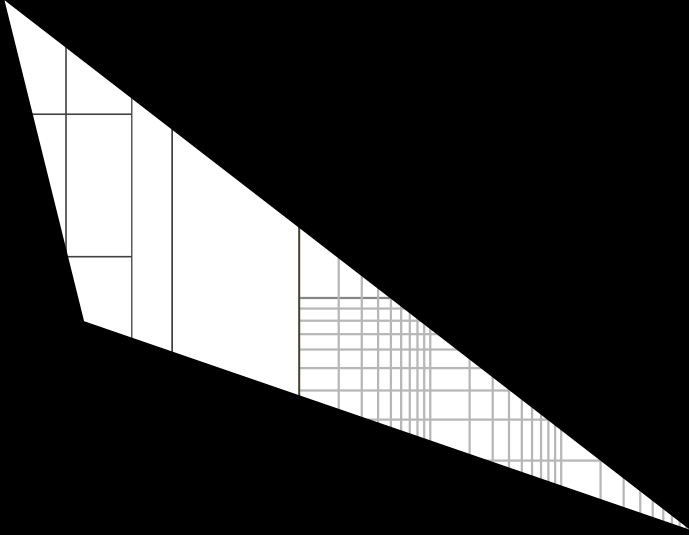
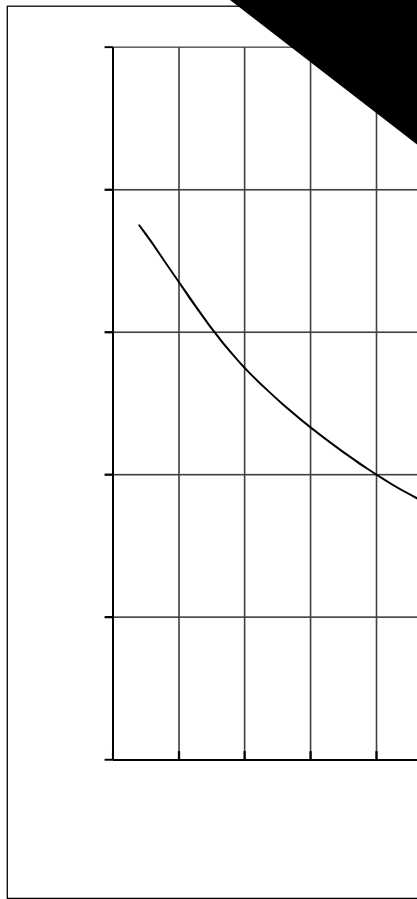
Module Characteristics

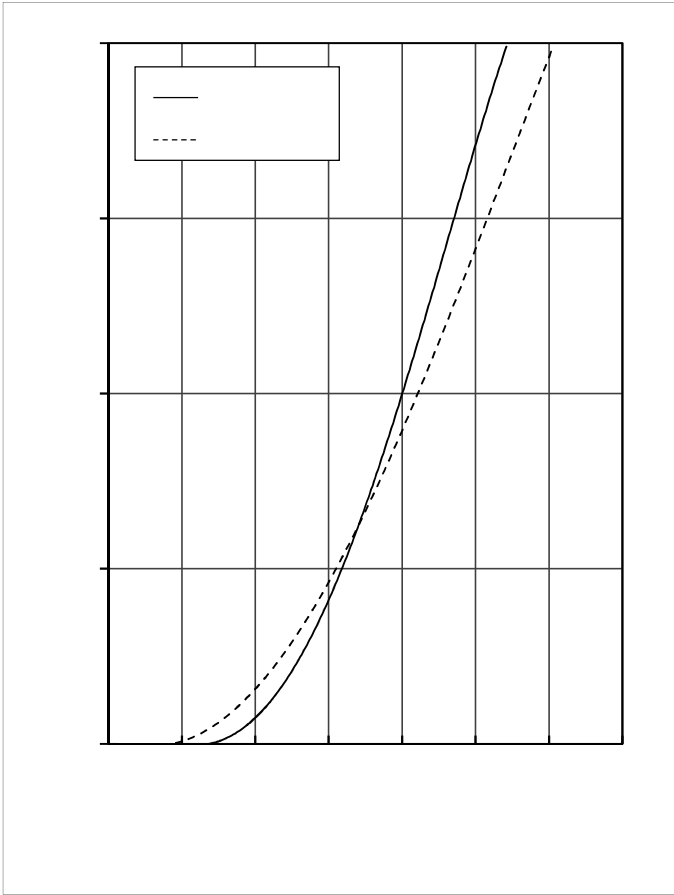
T_C=25°C unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V _{sd}	t=1min, f=50Hz	250			V
Minimum Junction Temperature	T _{jmax}				175	
Operating Junction Temperature	T _{jqp}		-40		150	
Storage Temperature	T _{stg}		-40		125	
Storage Inductance Module	L _{scE}			60		
Middle lead resistance terminals dip	R _{C+EE}	T _C =25°C, per switch		40		
	R _{ALCC}			30		
Thermal Resistance Junction to Case	R _{JC}	per GBF meter			115	KW
		per Dole meter			150	
		per GBF bare copper			115	
		per Dole copper			230	
		per Dole redifier			113	
Thermal Resistance Case to Sink	R _{CS}	per GBF meter		041		KW
		per Dole meter		051		
		per GBF bare copper		051		
		per Dole copper		077		
		per Dole redifier		102		
		per Middle		002		
Mating Force Per Clamp	F		30		60	N
Weight of Module	G			180		g

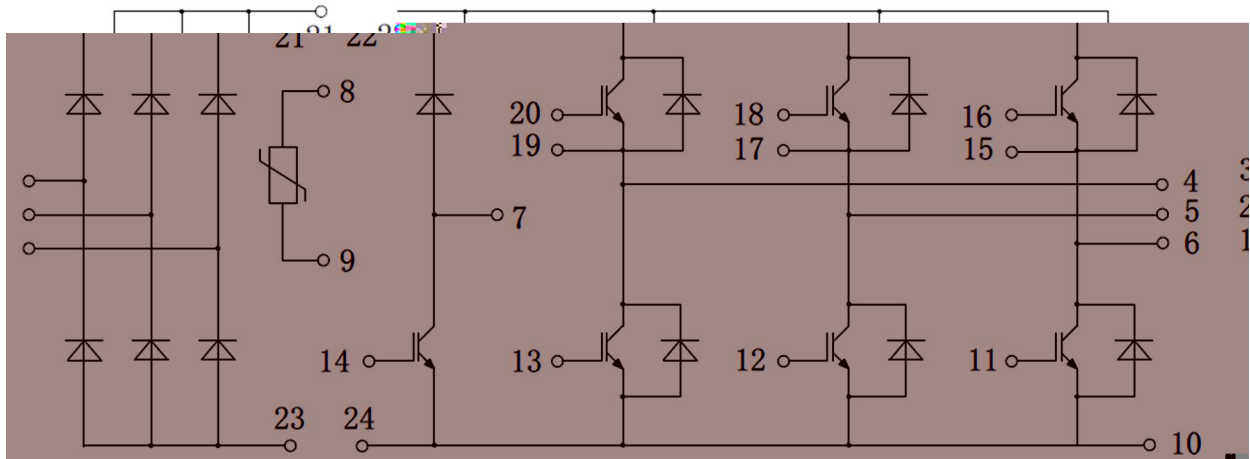








Circuit Diagram



Package Dimensions

