



JMT100DS16L1C

Multifunctional integration Modules

Features

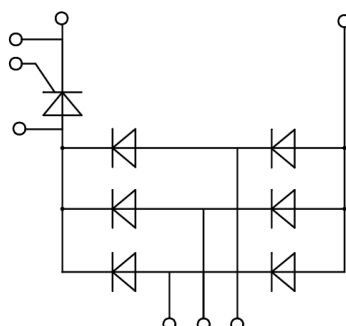
- Three phase bridge and a thyristor
- Low forward voltage
- High wave surging capability

Product Summary

Parameter	Value	Unit
V_{RRM}	1600	V
I_D	100	A
$I_{FSM}(@ t_p = 10ms)$	1200	A
$V_F(Max)$	1.40	V

Applications

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply



Thyristor Absolute Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak reverse voltage		V_{DRM}/V_{RRM}	1600	V
Non-repetitive peak reverse voltage	$T_{vj} = 25^\circ\text{C}$	V_{DSM}/V_{RSM}	1700	V
Bridge output current	$T_C = 85^\circ\text{C}$	$I_{D(AV)}$	100	A
Repetitive peak forward current	$t_p = 10 \text{ ms}, T_{vj} = 25^\circ\text{C}$	I_{TSM}	1200	A
I^2t value for fusing	$t_p = 10 \text{ ms}, T_{vj} = 25^\circ\text{C}$	I^2t	7200	A ² s
Critical rate of rise of on-state current		di/dt	150	A/ μs
Critical rate of rise of voltage	$V_D=2/3V_{DRM}$ $T_J=125^\circ\text{C}$ Gate Open	dv/dt	1000	V/ μs

**Thyristor Rectifier Electrical Characteristics (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)**

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	$I_T = 100\text{A}$	V_{TM}		1.10	1.30	V
Repetitive peak off-state current	$V_D = V_{DRM}, T_{vj} = 25^\circ\text{C}$	I_{DRM}			0.1	mA
	$V_D = V_{DRM}, T_{vj} = 125^\circ\text{C}$				20	mA
Reverse leakage current	$V_R = V_{RRM}, T_{vj} = 25^\circ\text{C}$	I_{RRM}			0.1	mA
	$V_R = V_{RRM}, T_{vj} = 125^\circ\text{C}$				20	mA
Threshold voltage	For power loss calculation only $T_{vj} = 125^\circ\text{C}$,	V_{TO}			0.85	V
Dynamic resistance	$T_{vj} = 125^\circ\text{C}$,	r_T			2.5	m Ω
Triggering gate voltage	$V_D = 12\text{V}, R_L = 30\Omega$	V_{GT}			1.8	V
Triggering gate current	$V_D = 12\text{V}, R_L = 30\Omega$	I_{GT}	20		120	mA
Holding current	$I_T = 1\text{A}$	I_H			250	mA
Latching current	$I_G = 1.2 I_{GT}$	I_L			300	mA
Non triggering gate voltage	$V_D = V_{DRM}, T_{vj} = 125^\circ\text{C}$	V_{GD}	0.25			V
Thermal resistance, junction to case	per diode	R_{thJC}			0.26	K/W
Temperature under operating conditions		T_{vjOP}	-40		125	$^\circ\text{C}$

Diode Absolute Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak reverse voltage		V_{RRM}	1600	V
Non-repetitive peak reverse voltage		V_{RSM}	1700	V
Output current	$T_C = 100^\circ\text{C}$	I_D	100	A
Forward surge current	1/2 cycle, Sine wave, 50Hz $T_{vj} = 25^\circ\text{C}$	I_{FSM}	1200	A
I^2t value for fusing		I^2t	7200	A ² s
Temperature under operating conditions		T_{vjOP}	-40 ~ +150	$^\circ\text{C}$

**Electrical Characteristics (@ $T_c = 25^\circ\text{C}$ unless otherwise specified)**

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	$I_D = 100\text{A}$, $T_{vj} = 25^\circ\text{C}$	V_F		1.20	1.40	V
Reverse leakage current	$V_R = V_{RRM}$, $T_{vj} = 25^\circ\text{C}$	I_{RRM}			0.1	mA
	$V_R = V_{RRM}$, $T_{vj} = 150^\circ\text{C}$				20	mA
Thermal resistance, junction to case	per diode	R_{thJC}			0.18	K/W

Module Characteristics (@ $T_c = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
RMS isolation voltage	A.C 50Hz, 1min	V_{ISO}	3000			V
Thermal resistance, case to heatsink	per module	R_{thCS}			0.10	K/W
Maximum Junction Temperature	Thyristor	$T_{vj\ max}$			125	$^\circ\text{C}$
	Diode				150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-40		125	$^\circ\text{C}$
Mounting torque	To terminals(M5)	M_t	2.55		3.45	N·m
	To heatsinks(M5)	M_s	2.55		3.45	N·m

Ordering Information

Device	Marking	Package	Weight	Inner Box	Per Carton
JMT100DS16L1C	JMT100DS16L1C	L1	210g/PCS	12 PCS	60 PCS

Typical Electrical & Thermal Characteristics

FIG.1: Power dissipation vs. on-state current
(per thyristor)

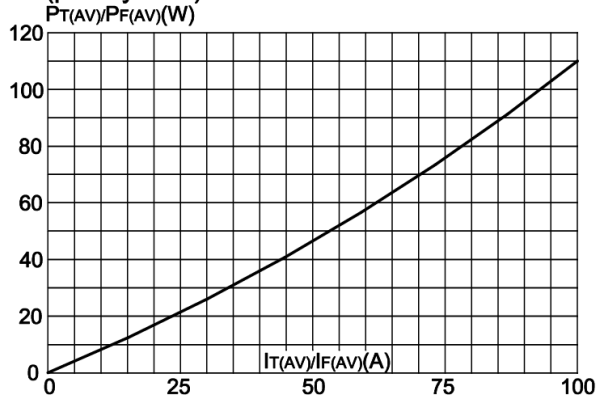


FIG.2: Maximum transient thermal impedance
junction to case(per thyristor)

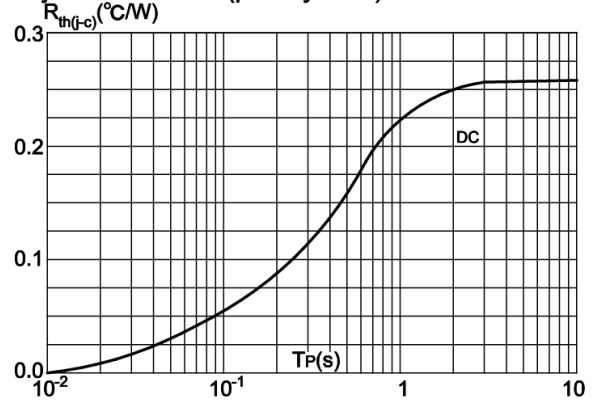


FIG.3: Forward characteristics
(per thyristor)

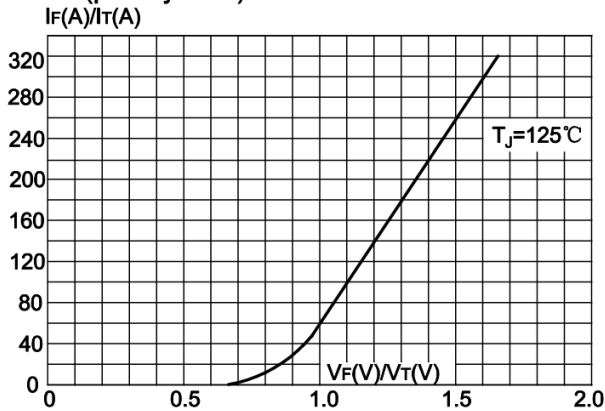


FIG.4: Relative variations of gate trigger current, holding current and latching current versus junction temperature

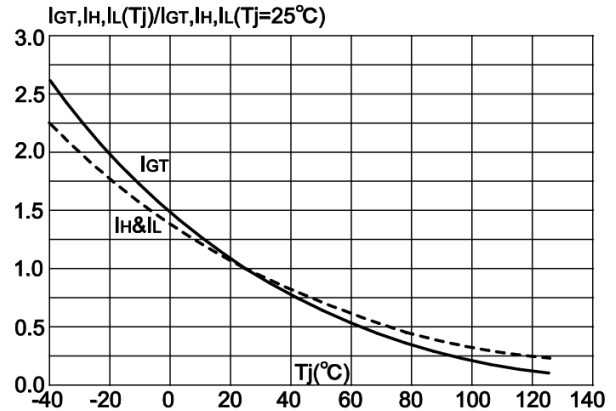


FIG.5 Gate trigger characteristics

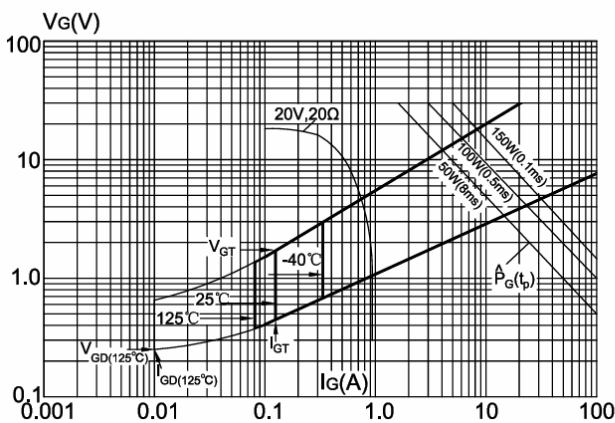


FIG.6: Forward current vs. case temperature
(per thyristor)

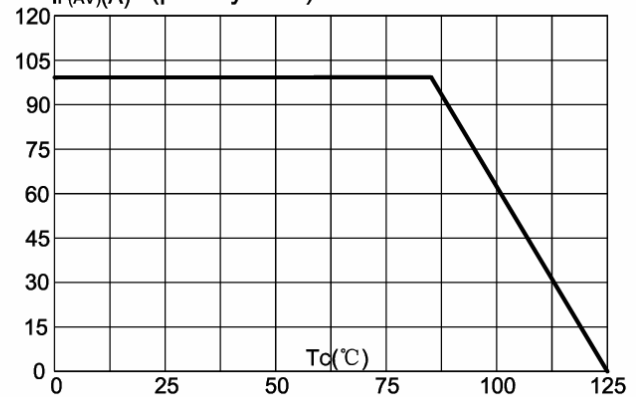
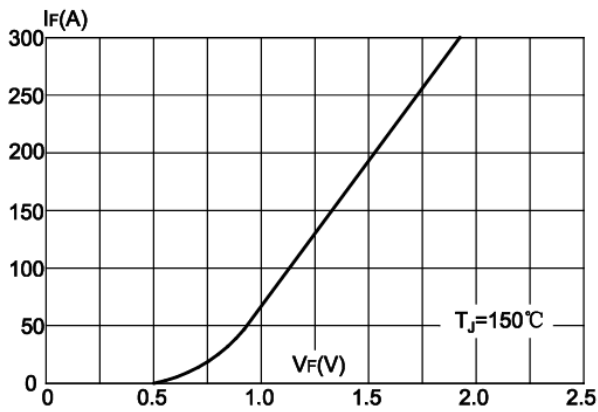
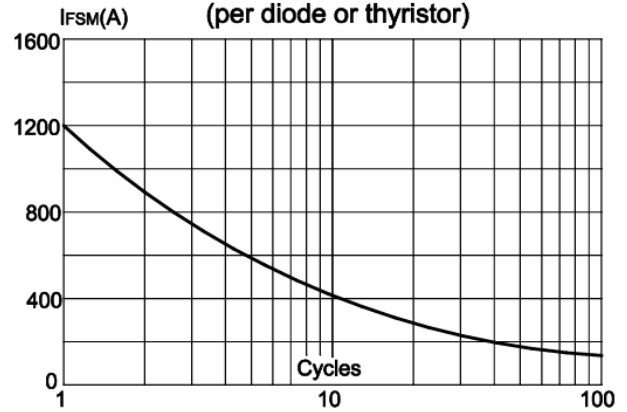
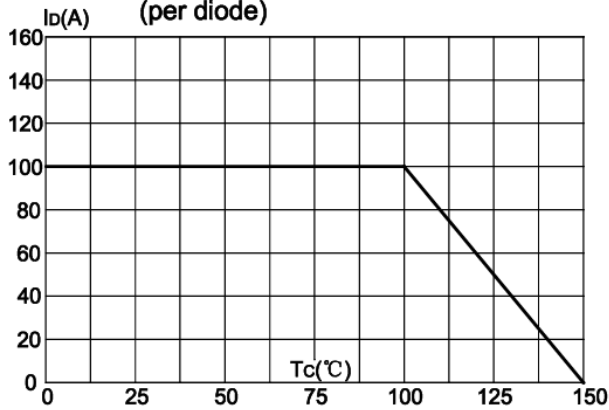
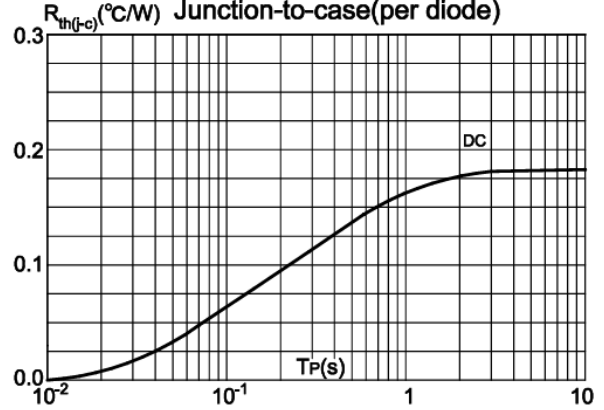
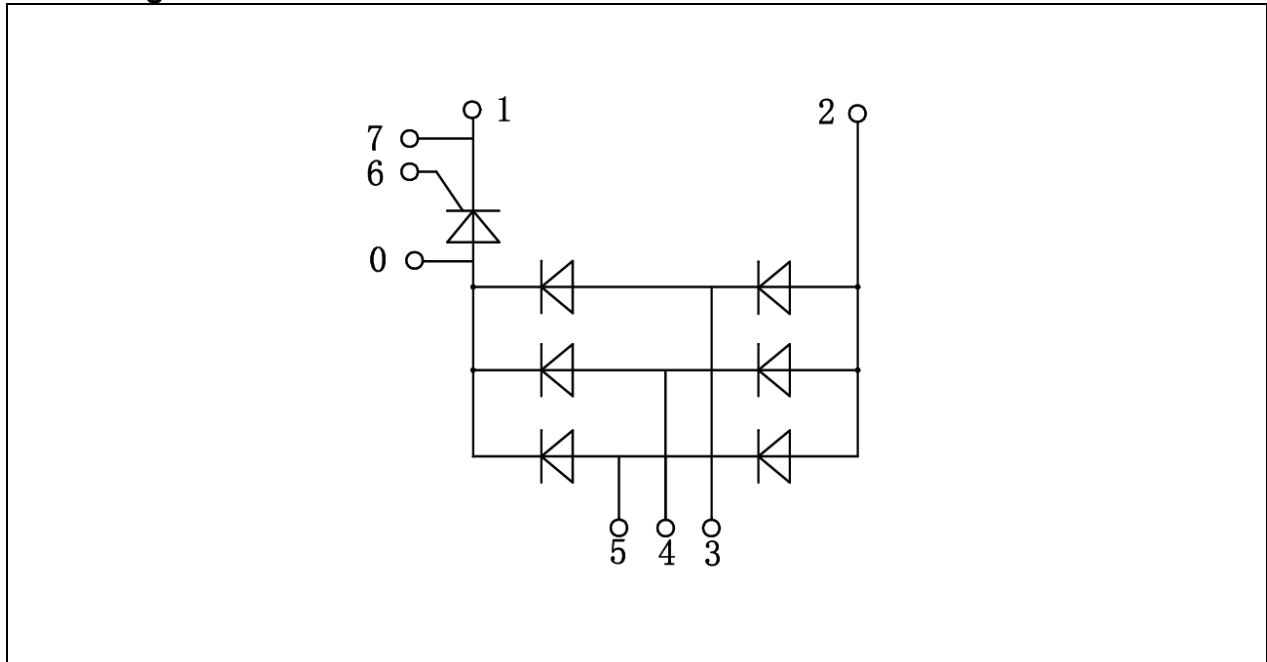
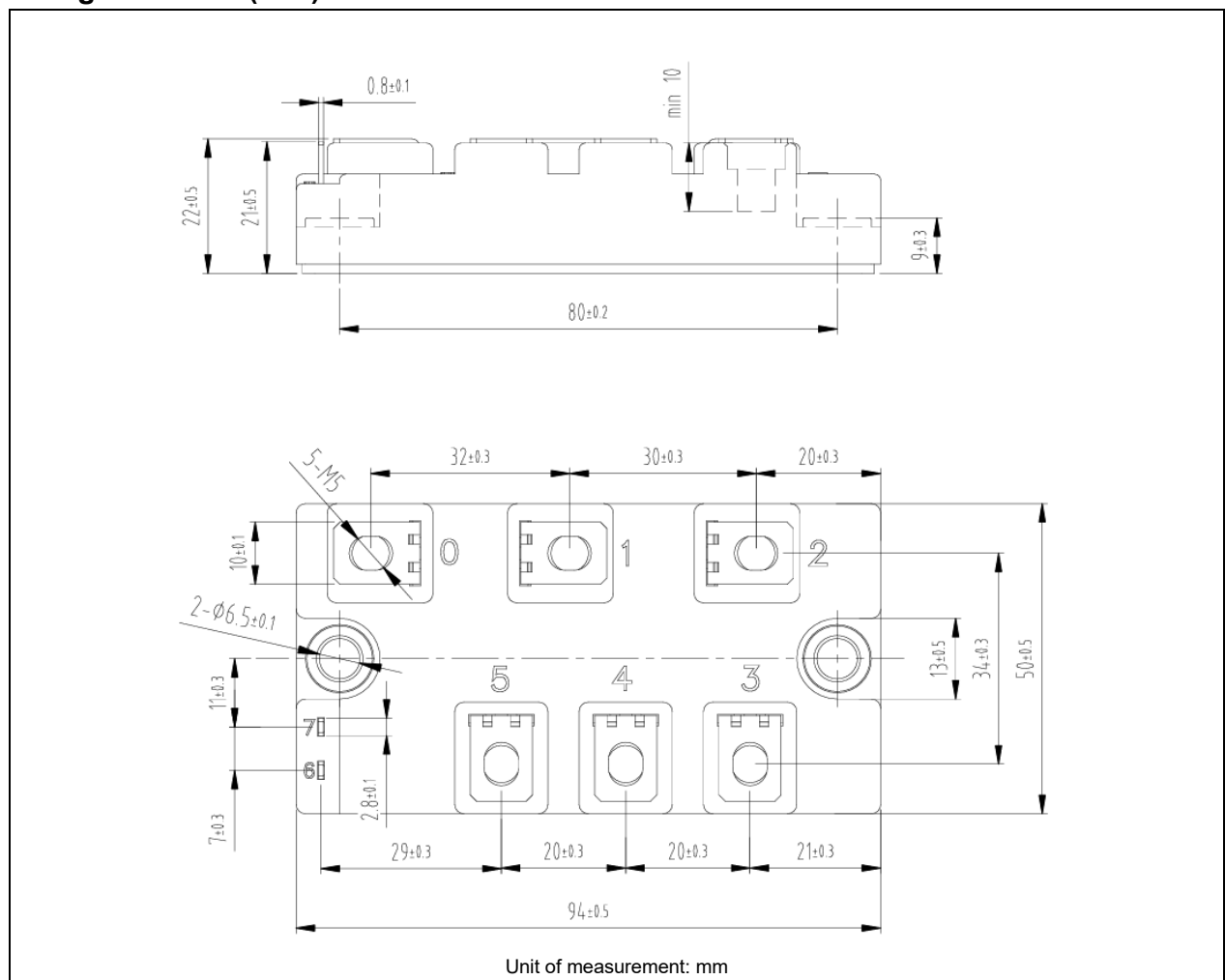


FIG.7: Forward characteristics(per diode)

FIG.8: Peak on-state surge current (per diode or thyristor)

FIG.9: Forward current vs. case temperature (per diode)

FIG.10: Maximum transient thermal impedance $R_{th(j-c)}$ Junction-to-case(per diode)


Circuit Diagram

Package Outlines (mm)




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