

**Trench FS IGBT****Features**

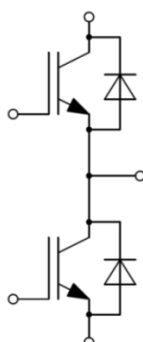
- Short Circuit Rated 10 μ s
- Low Stray Inductance
- Low Saturation Voltage
- Ultra Low loss
- HI-REL Power Terminals
- Lead Free, Compliant with RoHS Requirement

Product Summary

Parameter	Value	Unit
V_{CES}	1200	V
$I_C(@ T_C = 100^{\circ}C)$	200	A
$I_{CRM}(@ t_P = 1ms)$	400	A
$V_{CE(sat)}(Typ)$	1.80	V

Applications

- Industrial Inverters
- Servo Applications
- SMPS UPS
- Induction Heating
- Welder

**IGBT, Absolute Maximum Ratings (@ $T_C = 25^{\circ}C$ unless otherwise specified)**

Parameter	Conditions	Symbol	Values	Unit
Collector-emitter voltage	$T_{vj} = 25^{\circ}C$	V_{CES}	1200	V
Gate-emitter peak voltage		V_{GES}	± 20	V
Continuous collector current	$T_C = 100^{\circ}C$	$I_{C\ nom}$	200	A
Repetitive peak collector current	$t_P = 1ms$	I_{CRM}	400	A
Total power dissipation	$T_C = 25^{\circ}C, T_{vj\ max} = 175^{\circ}C$	P_{tot}	1153	W

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

Parameter	Conditions		Symbol	Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$I_C = 200\text{A}$, $V_{GE} = 15\text{V}$	$T_{vj} = 25^\circ\text{C}$	$V_{CE(sat)}$		1.80	2.20	V
		$T_{vj} = 125^\circ\text{C}$			2.10		
		$T_{vj} = 150^\circ\text{C}$			2.20		
Gate threshold voltage	$V_{CE} = V_{GE}$, $I_C = 8\text{mA}$		$V_{GE(th)}$	5.4	6.0	6.6	V
Gate-emitter leakage current	$V_{CE} = 0\text{V}$, $V_{GE} = 20\text{V}$		I_{GES}			400	nA
Collector leakage current	$V_{GE} = 0\text{V}$, $V_{CE} = 1200\text{V}$		I_{CES}			1	mA
Input capacitance	$f = 1\text{MHz}$, $T_{vj} = 25^\circ\text{C}$, $V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$		C_{ies}		14.0		nF
Reverse transfer capacitance			C_{res}		0.50		nF
Gate charge	$V_{GE} = -15 \dots +15\text{V}$		Q_G		1.8		uC
Internal gate resistor			R_{Gint}		3.8		Ω
Turn-on delay time, inductive load	$V_{CC} = 600\text{V}$, $I_C = 200\text{A}$, $R_G = 6.9\Omega$, $V_{GE} = \pm 15\text{V}$, $T_{vj} = 25^\circ\text{C}$		$t_{d(on)}$		225		ns
Rise time, inductive load			t_r		128		ns
Turn-off delay time, inductive load			$t_{d(off)}$		440		ns
Fall time, inductive load			t_f		25		ns
Turn-on energy loss per pulse			E_{on}		34.94		mJ
Turn-off energy loss per pulse			E_{off}		10.53		mJ
Turn-on delay time, inductive load	$V_{CC} = 600\text{V}$, $I_C = 200\text{A}$, $R_G = 6.9\Omega$, $V_{GE} = \pm 15\text{V}$, $T_{vj} = 125^\circ\text{C}$		$t_{d(on)}$		233		ns
Rise time, inductive load			t_r		145		ns
Turn-off delay time, inductive load			$t_{d(off)}$		489		ns
Fall time, inductive load			t_f		41		ns
Turn-on energy loss per pulse			E_{on}		45.74		mJ
Turn-off energy loss per pulse			E_{off}		13.32		mJ
SC data	$t_p \leq 10\mu\text{s}$, $V_{GE} = 15\text{V}$, $V_{CC} = 900\text{V}$, $V_{CEM} \leq 1200\text{V}$, $T_{vj} = 125^\circ\text{C}$		I_{sc}		1120		A
Thermal resistance, junction to case	per IGBT		$R_{th(j-c)}$			0.13	K/W
Temperature under switching conditions			$T_{vj op}$	-40		150	$^\circ\text{C}$

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

Parameter	Conditions	Symbol	Values	Unit
Repetitive peak reverse voltage	$T_{vj} = 25^\circ\text{C}$	V_{RRM}	1200	V
Continuous DC forward current		$I_{F(AV)}$	200	A
Repetitive peak forward current	$t_P = 1\text{ms}$	I_{FRM}	400	A
I^2t value for fusing	$T_{vj} = 150^\circ\text{C}$, $t_P = 10\text{ms}$, $V_R = 0\text{V}$	I^2t	7400	A^2s

FRED, Electrical Characteristics (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions		Symbol	Values			Unit
				Min.	Typ.	Max.	
Forward voltage	$I_F = 200A$, $V_{GE} = 0V$	$T_{vj} = 25^{\circ}C$	V_F		2.00	2.40	V
		$T_{vj} = 125^{\circ}C$			1.60		
		$T_{vj} = 150^{\circ}C$			1.55		
Peak reverse recovery current	$I_F = 200A$, $di/dt = 1100A/\mu s$, $V_R = 600V$, $V_{GE} = -15V$	$T_{vj} = 25^{\circ}C$	I_{RM}		39.4		A
		$T_{vj} = 125^{\circ}C$			63.7		
Recovered charge		$T_{vj} = 25^{\circ}C$	Q_{rr}		7.09		μC
		$T_{vj} = 125^{\circ}C$			19.1		
Reverse Recovery energy		$T_{vj} = 25^{\circ}C$	E_{rec}		2.04		mJ
		$T_{vj} = 125^{\circ}C$			5.27		
Thermal resistance, junction to case	per Diode		$R_{th(j-c)}$			0.20	K/W
Temperature under switching conditions			$T_{vj\ op}$	-40		150	$^{\circ}C$

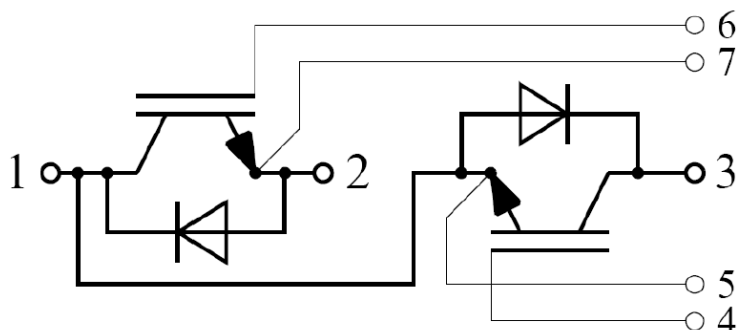
**Module Characteristics**

Parameter	Conditions	Symbol	Values			Unit
			Min.	Typ.	Max.	
Isolation voltage (All terminals shorted)	f = 50Hz, 1minute	V_{iso}	2.5			kV
Maximum junction temperature		T_J			175	°C
Thermal resistance, case to heatsink	per module	$R_{th(c-s)}$		0.012		K/W
Storage temperature		T_{stg}	-40		125	°C
Stray inductance module		L_{SCE}		20		nH
Module lead resistance, terminals - chip	per switch	$R_{CC'+EE'}$		0.7		mΩ
Mounting torque	M6	M	2.5		5.0	N·m
Terminal connection torque	M6	M	3.0		6.0	N·m

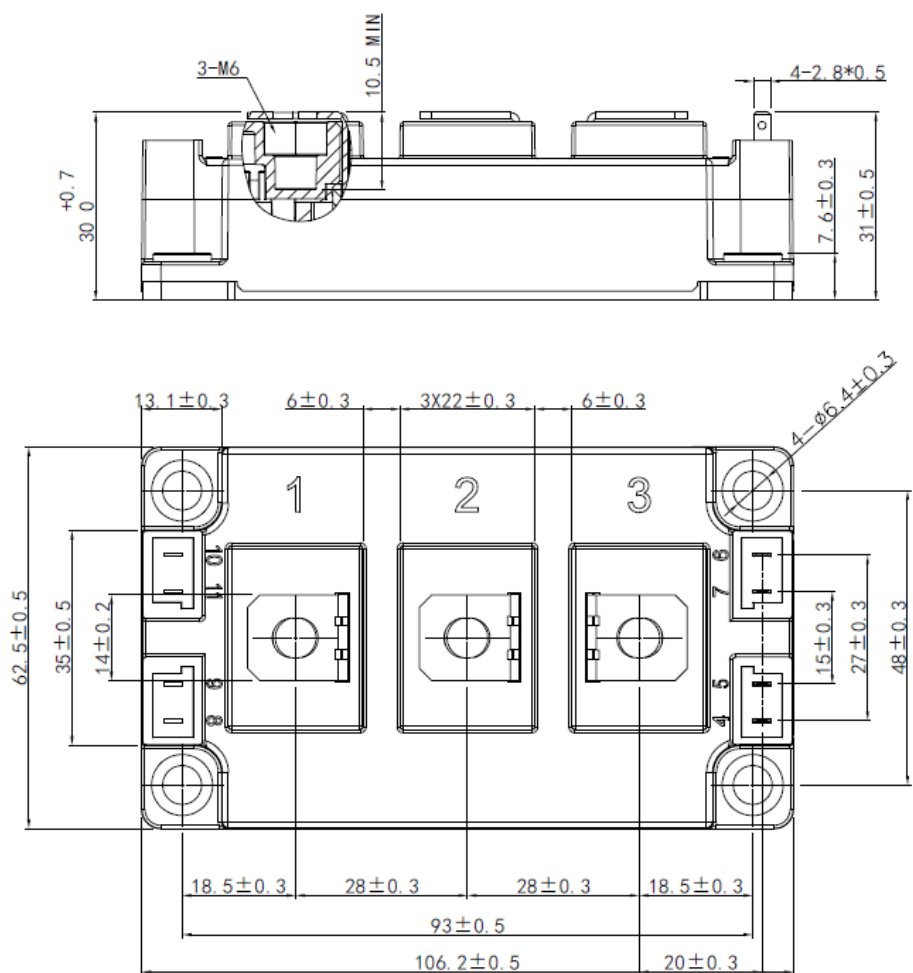
Ordering Information

Device	Marking	Package	Weight	Inner Box	Per Carton
JMG200HF12G2S1	JMG200HF12G2S1	G2	300g/PCS	12PCS	60PCS

Circuit Diagram



Package Outlines (mm)



Unit of measurement: mm

Typical Electrical & Thermal Characteristics

Fig 1. IGBT Output Characteristics
Inverter (typical) $V_{GE}=15\text{ V}$

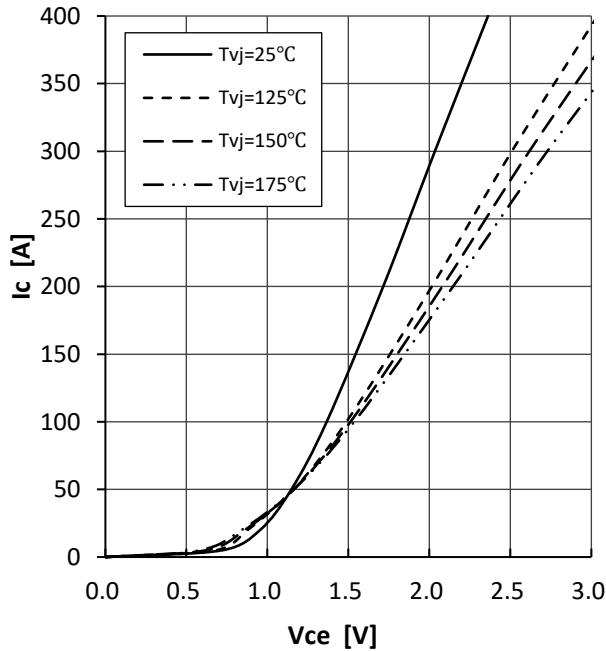


Fig 2. IGBT Output Characteristics
Inverter (typical)

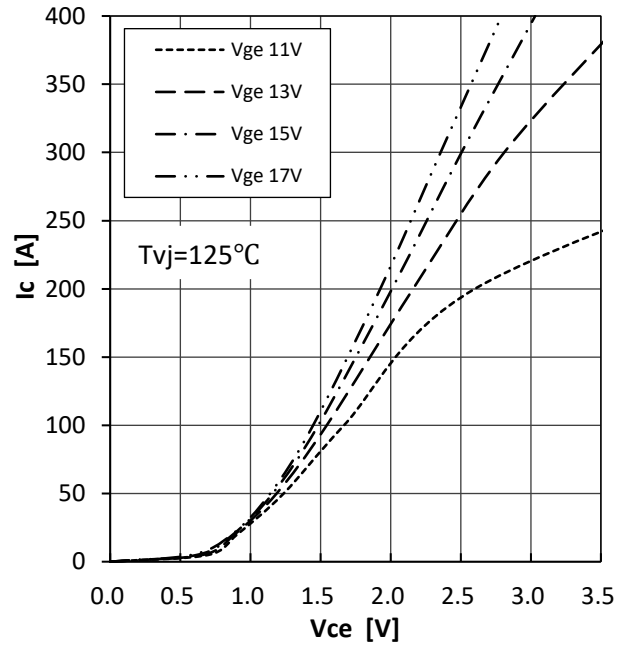


Fig 3. IGBT Transfer Characteristics
Inverter (typical) $V_{CE}=20\text{ V}$

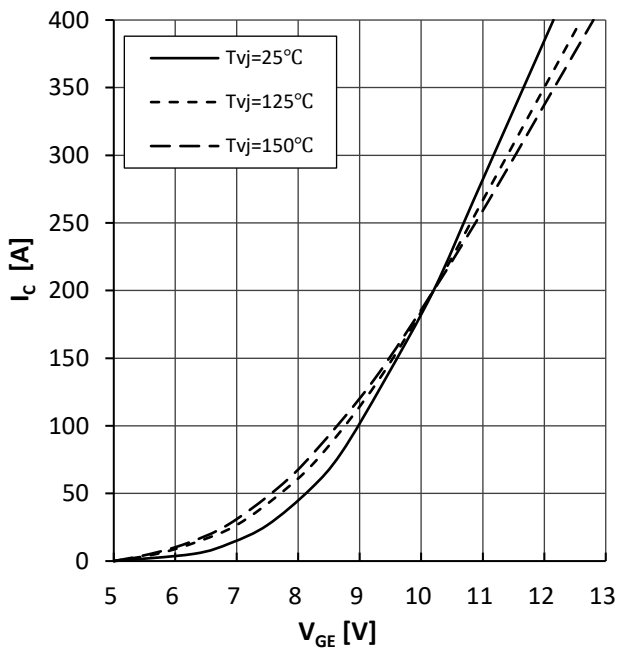


Fig 4. IGBT Switching Loss vs I_c
Inverter (typical)
 $R_g=6.9\ \Omega$, $V_{CE}=600\text{ V}$, $V_{GE}=\pm 15\text{ V}$

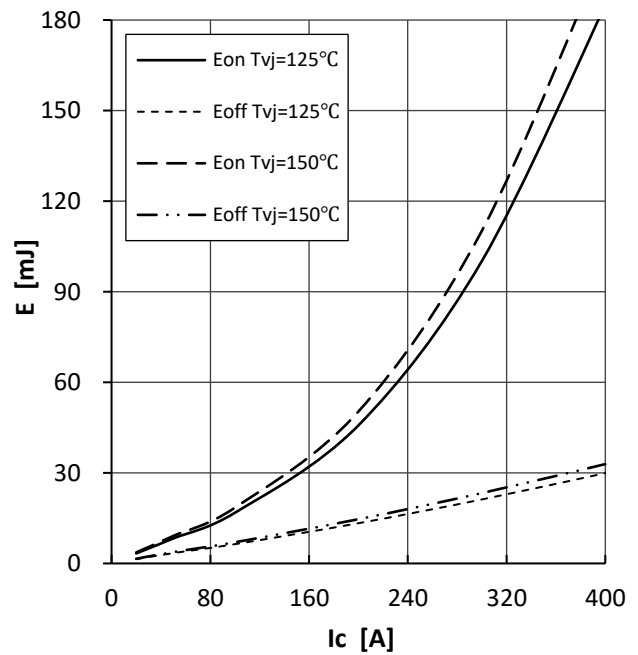


Fig 5. IGBT Switching Loss vs. R_g ,
Inverter (typical)
 $I_c=200$ A, $V_{CE}=600$ V, $V_{GE}=\pm 15$ V

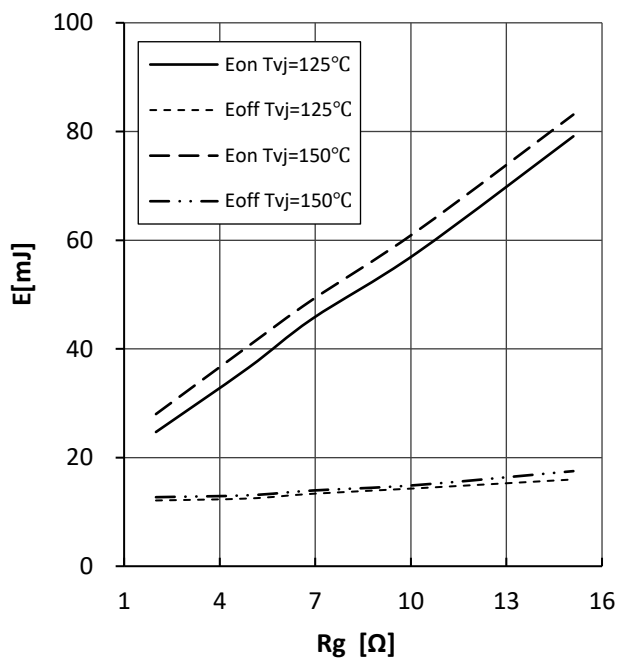


Fig 6. IGBT Transient Thermal Impedance
Inverter

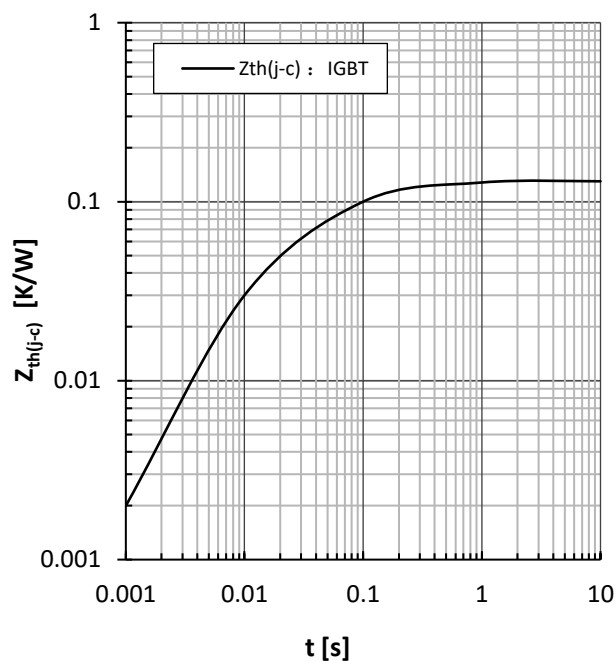


Fig 7. Reverse bias safe operating area
IGBT, Inverter (RBSOA)

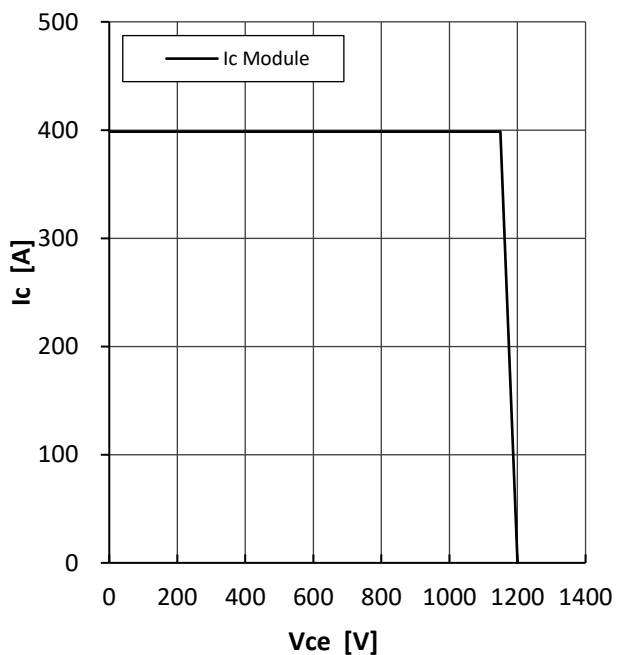


Fig 8. FRED Forward Characteristics,
Inverter (typical)

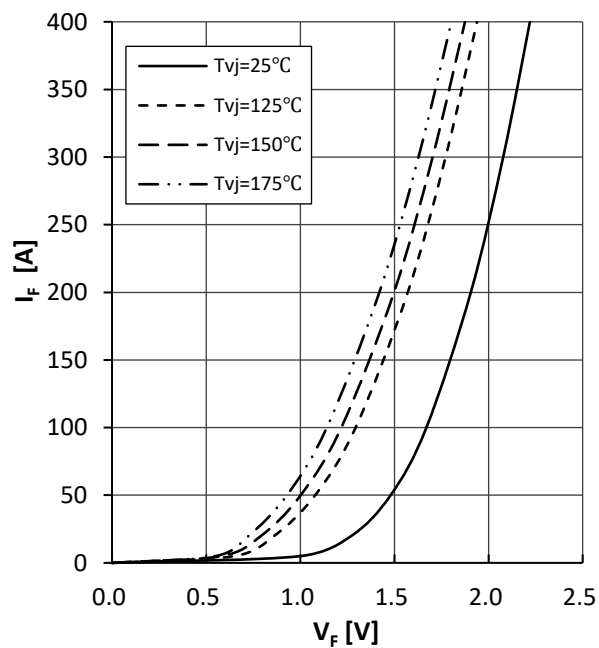


Fig 9. FRED Switching Loss vs. I_c ,
Inverter (typical)
 $R_g=6.9\ \Omega$, $V_{CE}=600\ V$

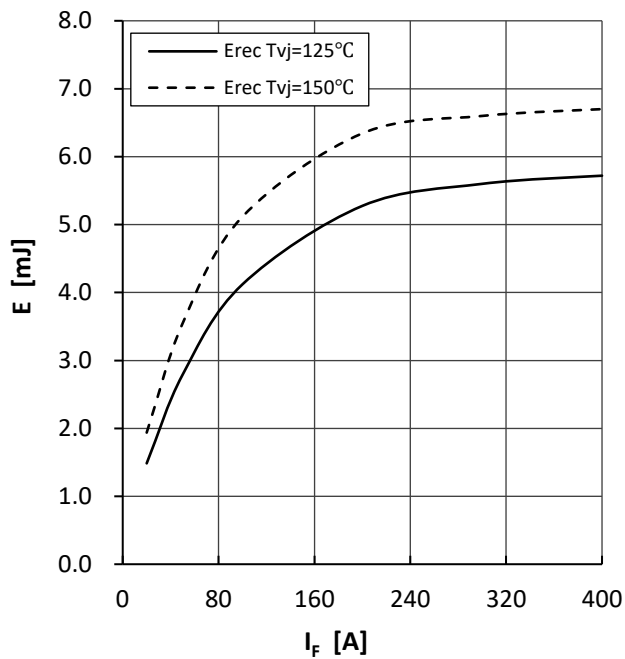


Fig 10. FRED Switching Loss vs. R_g ,
Inverter (typical)
 $I_c=200\ A$, $V_{CE}=600\ V$

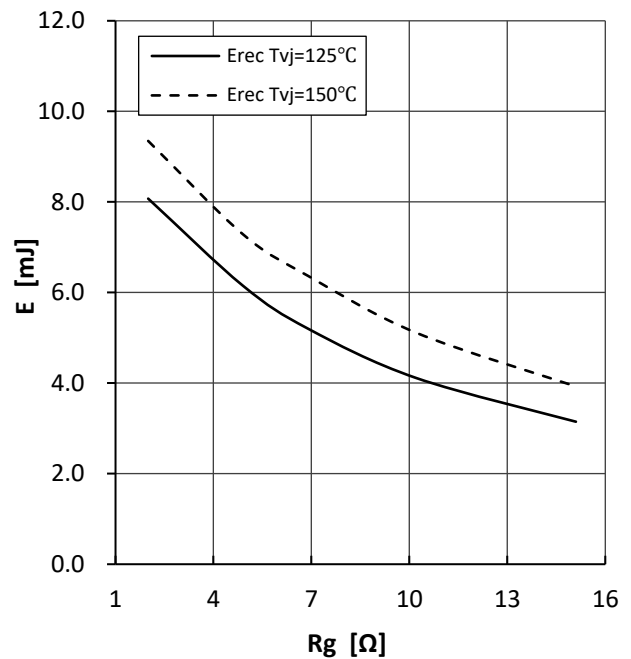
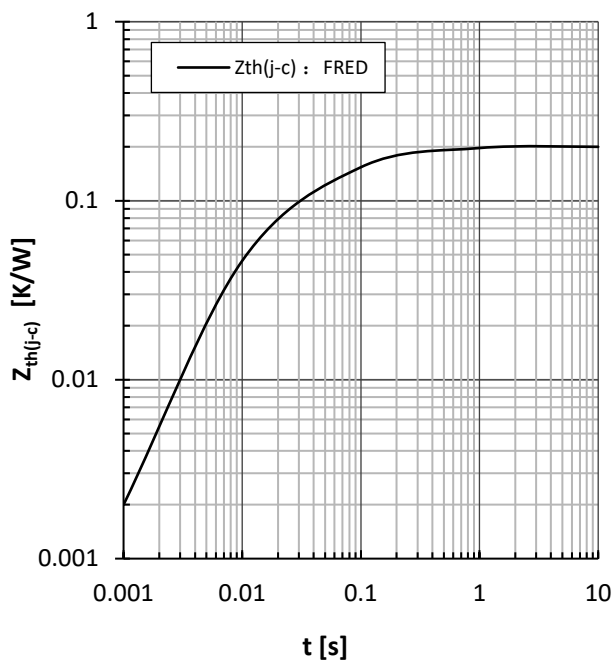


Fig 11. FRED Transient Thermal Impedance
Inverter





Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Semiconductor Co., Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it. This information in this document is subject to change without prior notice. Notwithstanding this, Jiangsu JieJie will fully comply with the terms outlined in a signed agreement. Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document is the initial release, dated 9 October 2026. This document supersedes and replaces all information previously supplied.

 is registered trademark of Jiangsu JieJie Semiconductor Co., Lt ©2026 Jiangsu JieJie Semiconductor Co., Ltd. All rights reserved.