

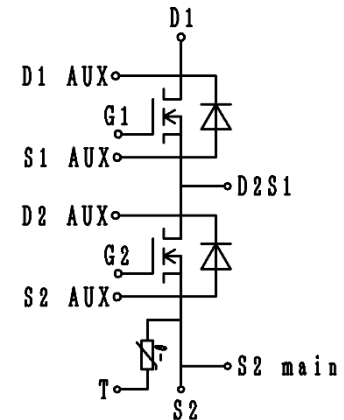
MSM900GS17CLT

Target Specification

SiC MOSFET 1700V

FEATURES

- * Ultra low switching loss with SiC MOSFET
- * High current density package
- * Low stray inductance & low Rth(j-c)
- * Half-bridge (2in1)
- * Built in temperature sensor
- * Scalable large current easily handled by paralleling
- * Equipped with current sensing terminals



ABSOLUTE MAXIMUM RATINGS (T_c=25°C)

Item	Symbol	Unit	MSM900GS17CLT
Drain Source Voltage	V _{DS}	V	1,700
Gate Source Voltage	V _{GS}	V	+20/-15
Drain Current	DC	I _D	900
	1ms	I _{DM}	1,800
Source Current	DC	I _S	900
	1ms	I _{SM}	1,800
Junction Temperature	T _{vj op}	°C	-50 ~ +150
Storage Temperature	T _{stg}	°C	-55 ~ +150
Isolation Voltage	V _{ISO}	V _{RMS}	4,000(AC 1 minute)
Screw Torque	Terminals (M3/M8)	M	0.8/15
	Mounting (M6)	M	6.0 (1)

Notes: (1) Recommended Value 5.5±0.5N·m

ELECTRICAL CHARACTERISTICS

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions	
Drain Source Cut-Off Current	I _{DSS}	mA	-	-	0.05	V _{DS} =1,700V, V _{GS} =0V, T _{vj} =25°C	
			-	-	1	V _{DS} =1,700V, V _{GS} =0V, T _{vj} =175°C	
Gate Source Leakage Current	I _{GSS}	nA	-	-	+100	V _{GS} =+20V, V _{DS} =0V, T _{vj} =25°C	
			-100	-	-	V _{GS} =-15V, V _{DS} =0V, T _{vj} =25°C	
Drain Source on-state Voltage	V _{DS(on)}	V	-	3.1	-	I _D =900A, V _{GS} =15V, T _{vj} =25°C	
			TBD	3.9	TBD	I _D =900A, V _{GS} =15V, T _{vj} =175°C	
Gate Source Threshold Voltage	V _{GS(th)}	V	TBD	3.0	TBD	V _{DS} =10V, I _D =900mA, T _{vj} =25°C	
Input Capacitance	C _{iss}	nF	-	115	-	V _{DS} =10V, V _{GS} =0V, f=100kHz, T _{vj} =25°C	
Internal Gate Resistance	R _{g(int)}	Ω	-	2.5	-	V _{DS} =10V, V _{GS} =0V, f=100kHz, T _{vj} =25°C	
Switching Times	Rise Time	t _r	-	TBD	-	V _{DD} =900V, I _D =900A	
	Turn On Delay Time	td(on)	-	TBD	-	L _s =40nH	
	Fall Time	t _f	-	TBD	-	R _G (on/off)= 1.8/2.7 Ω (2)	
	Turn Off Delay Time	td(off)	-	TBD	-	V _{GS} =+15/-10V, T _{vj} =175°C	
Source Drain Voltage	V _{SD}	V	-	2.0	-	I _S =900A, V _{GS} =+15V, T _{vj} =25°C	
			TBD	3.4	TBD	I _S =900A, V _{GS} =+15V, T _{vj} =175°C	
			-	9.4	-	I _S =900A, V _{GS} =-10V, T _{vj} =25°C	
			TBD	7.3	TBD	I _S =900A, V _{GS} =-10V, T _{vj} =175°C	
Reverse Recovery Time	t _{rr}	μs	-	TBD	-	V _{DD} =900V, I _S =900A, L _s =40nH T _{vj} =175°C, R _G (on/off)=1.8/2.7 Ω	
Turn-on Loss per Pulse	E _{on}	J/P	-	0.21	-	V _{DD} =900V, I _D =900A, L _s =40nH	
Turn-off Loss per Pulse	E _{off}	J/P	-	0.15	-	R _G (on/off)=1.8/2.7 Ω (2)	
Reverse Recovery Loss per Pulse	E _{rr}	J/P	-	0.01	-	V _{GS} =+15/-10V, T _{vj} =175°C	
Stray Inductance Module	L _{SCE}	nH	-	10	-	Between D1(main) and S2(main)	
NTC-Thermistor Resistance	R ₂₅	kΩ	-	5	-	T _c =25°C	
	Deviation	ΔR/R	%	-5	-	5	T _c =25°C
Thermal Impedance	MOSFET	Rth(j-c)	K/W	-	-	0.048	Junction to case
Contact Thermal Impedance		Rth(c-f)	K/W	-	-	0.02	Case to fin (per 1 arm)

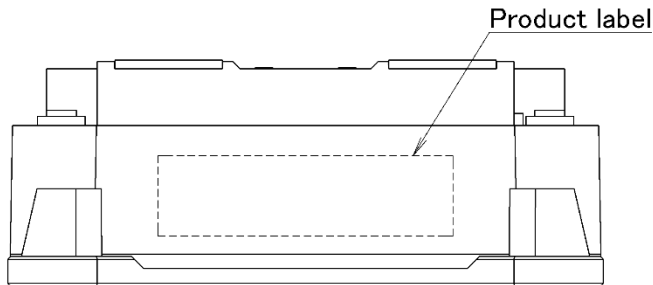
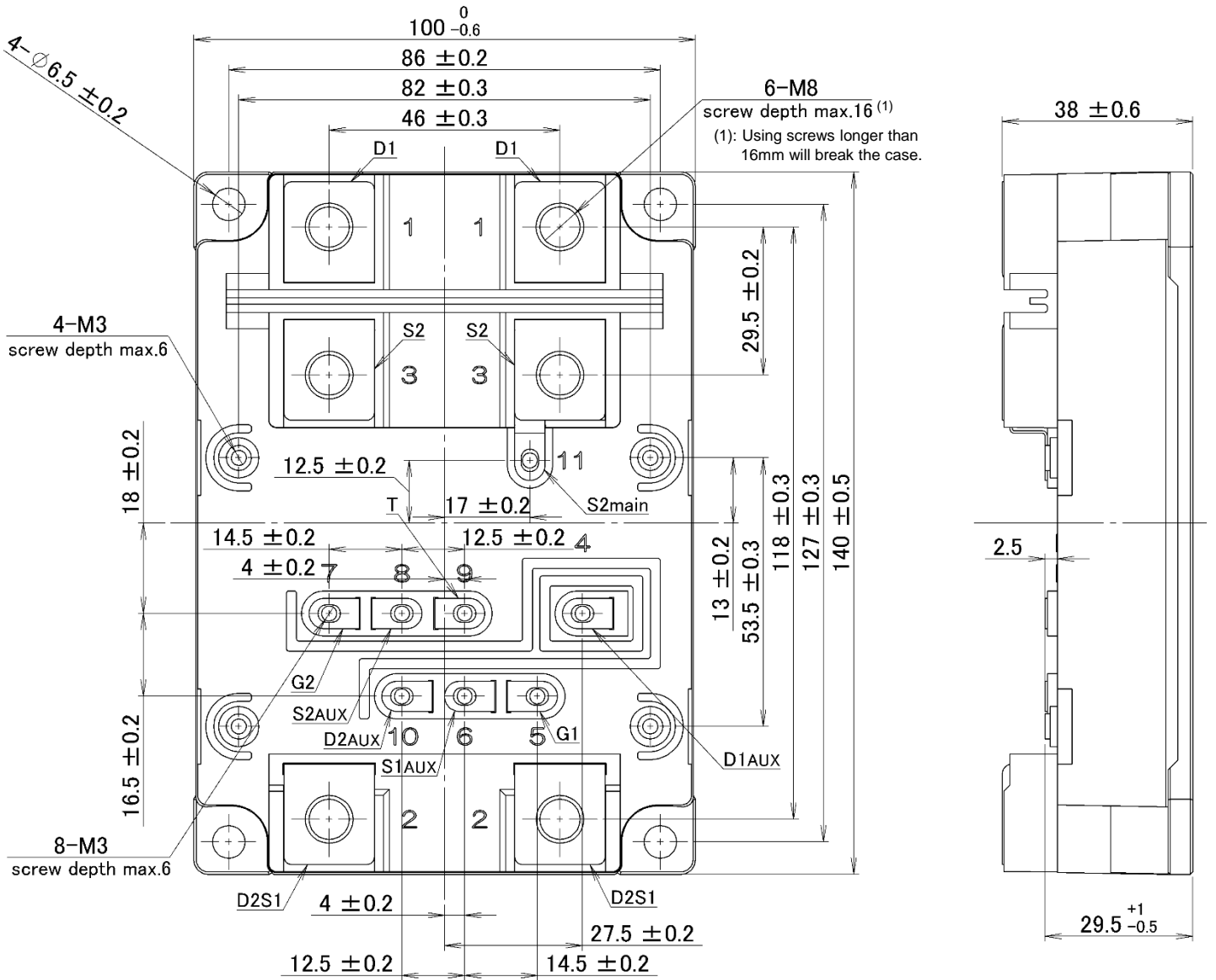
Notes: (2) R_G value is a test condition value for evaluation, not recommended value.Please, determine the suitable R_G value by measuring switching behavior and checking results with the respective SOA.

- * Please contact our representatives at order.
- * For improvement, specifications are subject to change without notice.
- * For actual application, please confirm this spec sheet is the newest revision.
- * ELECTRICAL CHARACTERISTIC items shown in above table are according to IEC 60747-2 and IEC 60747-9.

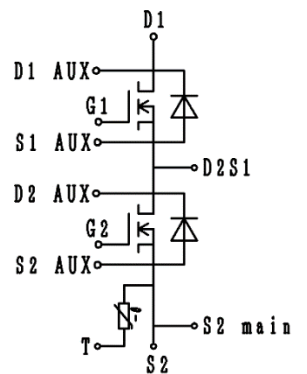
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Target Specification

OUTLINE DRAWING(unit in mm)



- 1 : D1
- 2 : D2S1
- 3 : S2
- 4 : D1AUX
- 5 : G1
- 6 : S1AUX
- 7 : G2
- 8 : S2AUX
- 9 : T
- 10 : D2AUX
- 11 : S2main



Weight: 770(g)

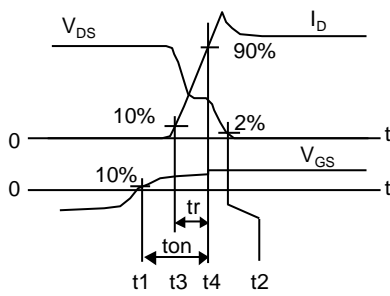
Terminal Number

Circuit Diagram

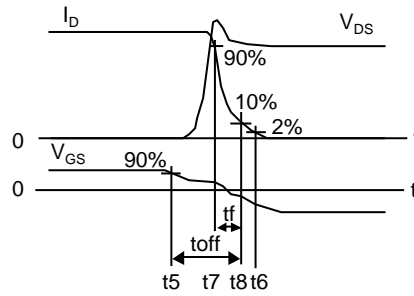
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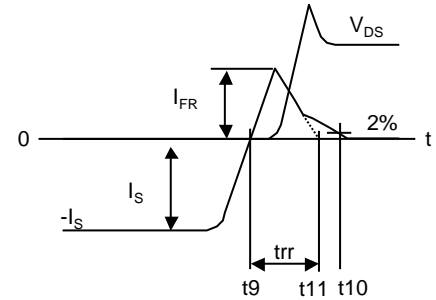
Definition of switching loss



$$E_{on} = \int_{t1}^{t2} I_D \cdot V_{DS} dt$$



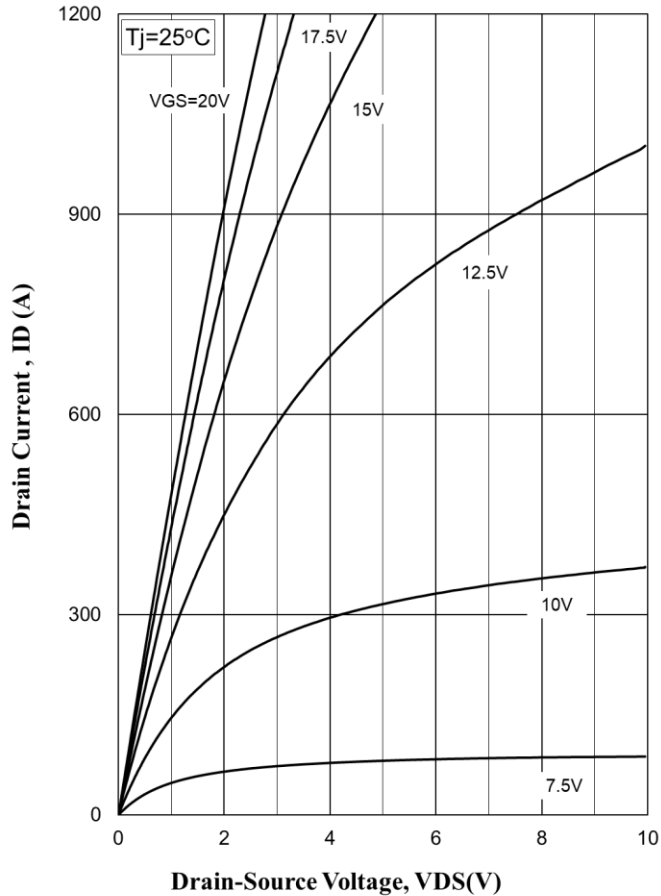
$$E_{off} = \int_{t5}^{t6} I_D \cdot V_{DS} dt$$



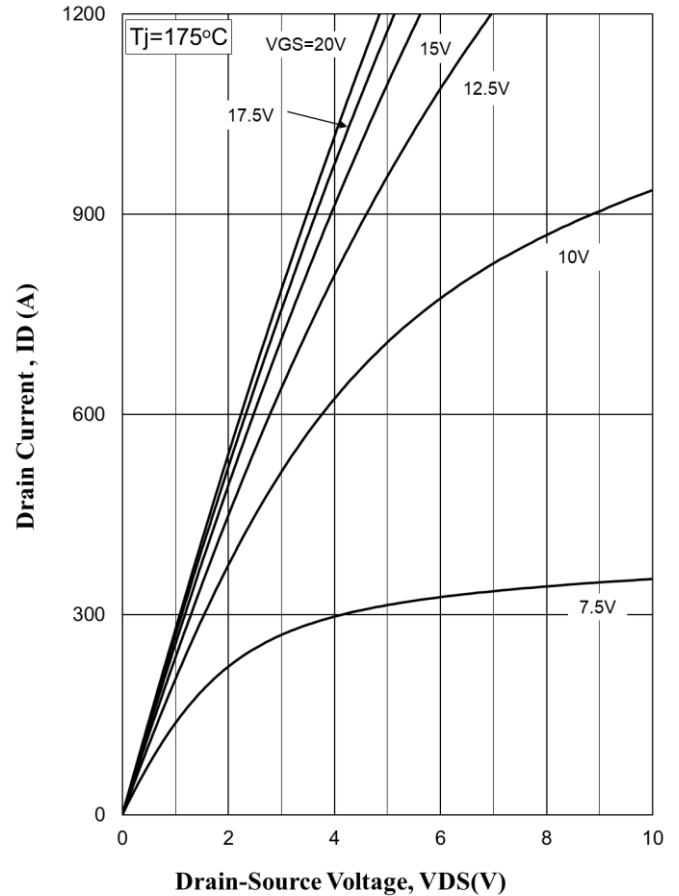
$$E_{rr} = \int_{t9}^{t10} I_{FR} \cdot V_{DS} dt$$

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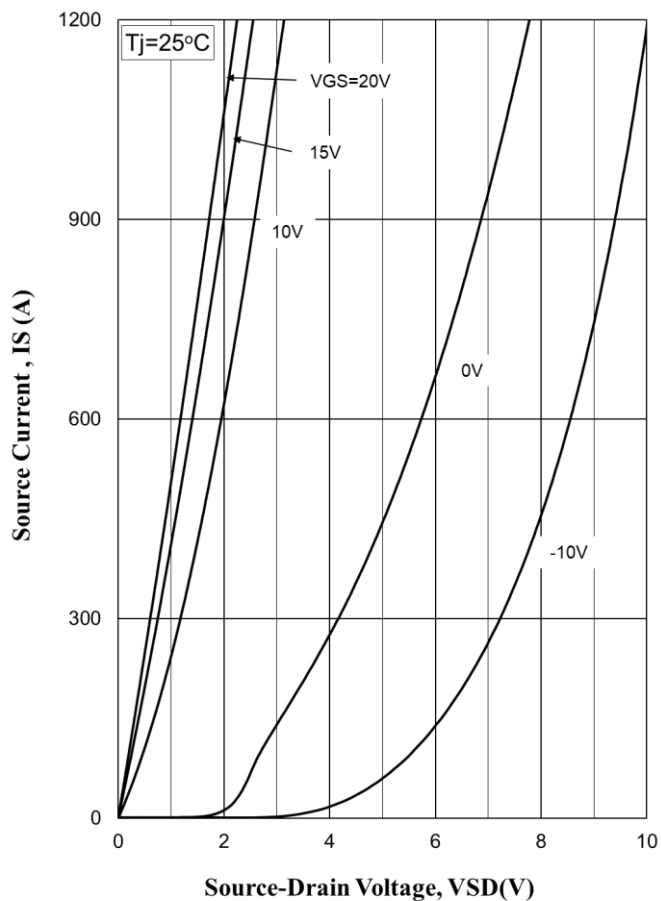
Target Specification



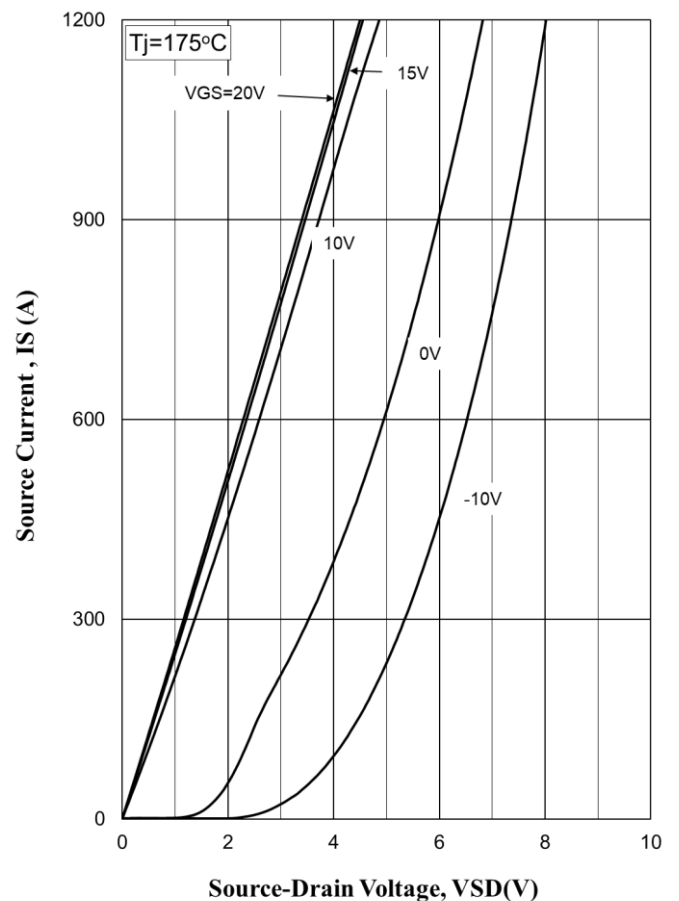
Drain Current vs. Drain - Source Voltage



Drain Current vs. Drain - Source Voltage



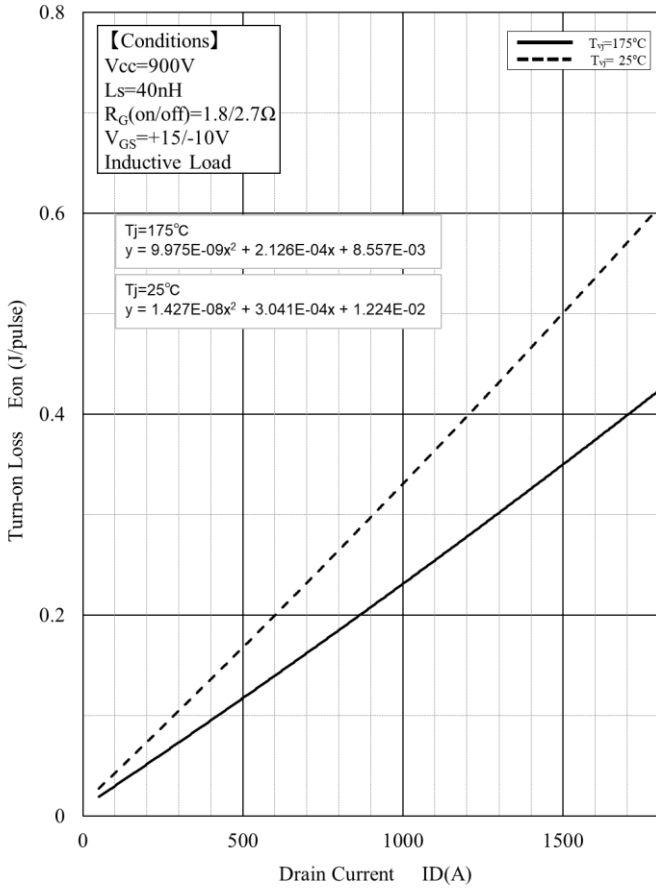
Source Current vs. Source - Drain Voltage



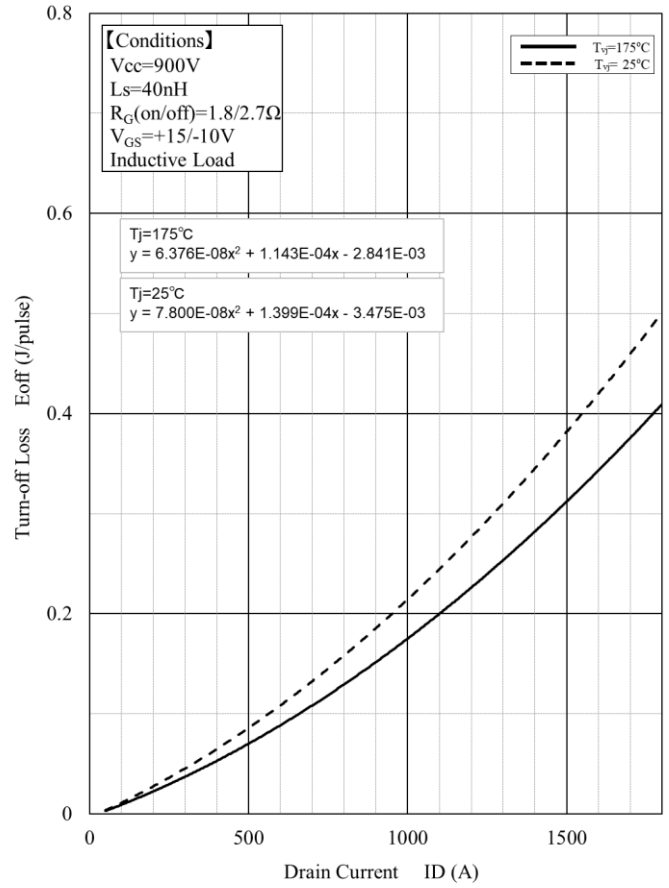
Source Current vs. Source - Drain Voltage

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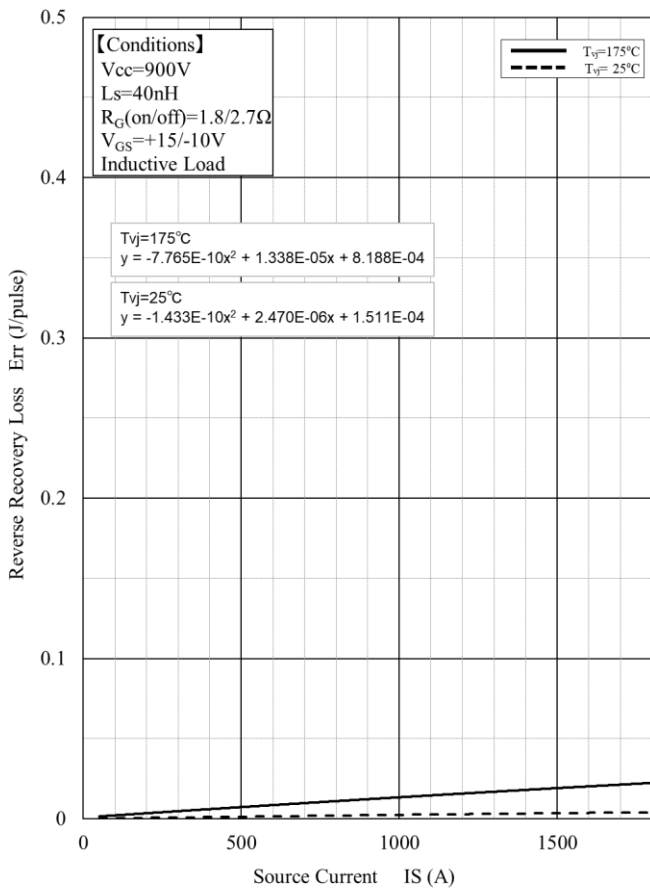
Target Specification



Turn-on Loss vs. Drain Current



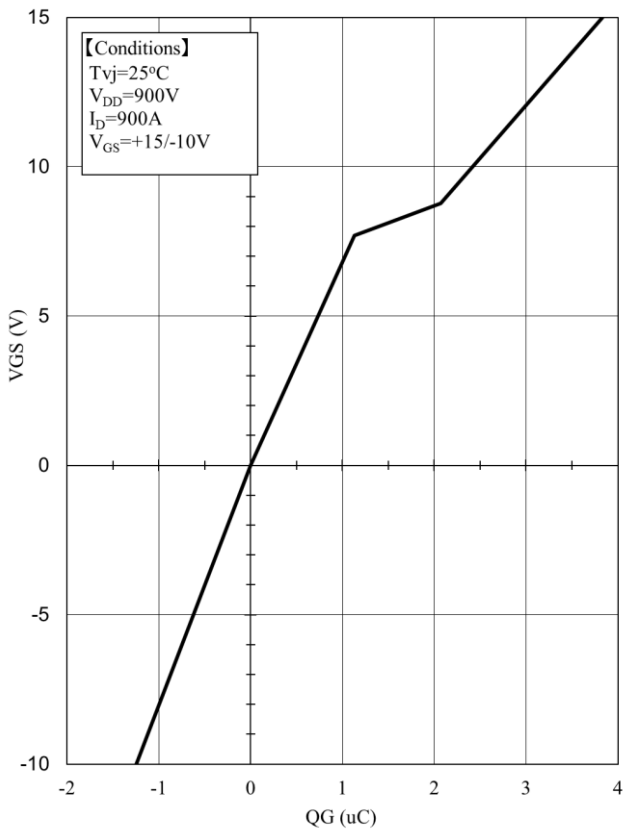
Turn-off Loss vs. Drain Current



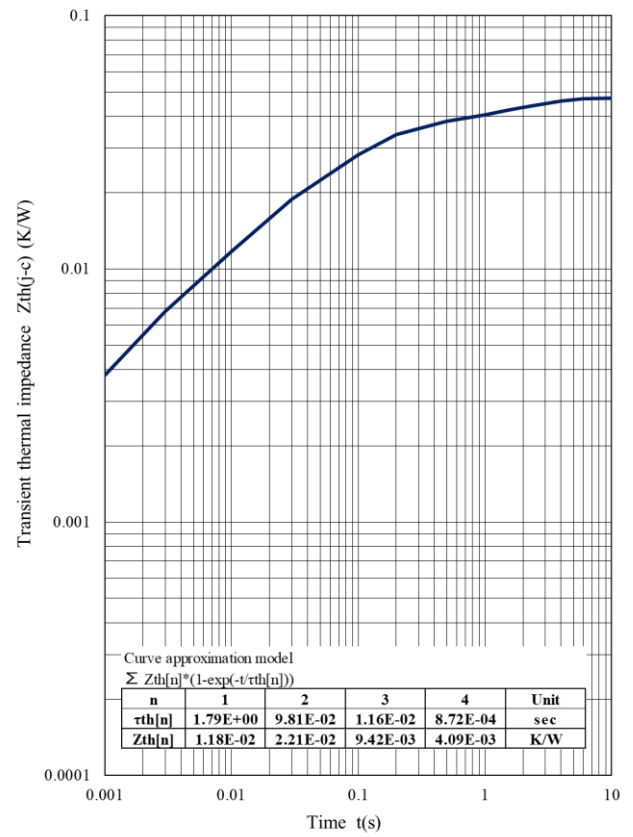
Reverse Recovery Loss vs. Source Current

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Target Specification



QG-VGS curve



Transient Thermal Impedance Curve (Maximum Value)

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HITACHI POWER SEMICONDUCTORS

Notices

1. Since mishandling of semiconductor devices may cause malfunctions, please be sure to read "Precautions for Safe Use and Notices" in the individual brochure before use.
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5. A semi-processed article is done now using solder which contains lead inside the semiconductor devices. There is possibility of the regulation substance depend on the applied models, so please check before using.
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8. For handling other than described in this manual, follow the handling instructions (IGBT-HI-00002).
9. In this module, the maximum depth of the screw holes on the main terminals is 16mm. Using screws longer than 16mm will break the case.

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- For inquiries relating to the products, please contact nearest representatives that is located "Inquiry" portion on the top page of a home page.
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Hitachi power semiconductor home page address

<http://www.hitachi-power-semiconductor-device.co.jp/>

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Target Specification

HITACHI POWER SEMICONDUCTORS

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