MMN7CB120BA6BS

PRODUCT FEATURES

☐ High Speed Switching

☐ Low Switching Losses

☐ High Blocking Voltage with Low On-resistance

☐ Temperature Independent Trun-off Switching Losses

☐ Low Inductive Design

APPLICATIONS

☐ DC/DC Converter

☐ EV Chargers

☐ UPS

☐ High Frequency Switching Application

Half-Bridge

MODULE CHARACTERISTICS(T_{vj}=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{isol}	Isolation test voltage	RMS, f = 50 Hz, t = 1 min	3.0	KV
Internal isolation	basic insulation		ALN	
CTI	Comparative tracking index		＞200	
RTI	Relative thermal index (electrical)	housing	120	℃
T_{stg}	Storage Temperature		-40~125	℃
F	Mounting Force Per Clamp		20-50	N
L_{sCE}	Stray inductance module		9.1	nH
G	Weight		23.3	g

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MOSFET

ABSOLUTE MAXIMUM RATINGS(T_{vj}=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_{DSS}	Drain - source voltage		1200	V
I_{DDC}	Continuous DC Drain Current	V_{GS}=18V,T_H=105℃,T_{vj}=175℃	100	A
I_{DRM}	Repetitive Peak Drain Current	tp limited by T_{vjmax}	300	A
V_{GSS}	Gate-source voltage, max.transient voltage	10 hours over lifetime tp＜1µs	-11/+23	V
V_{GSS}	Gate-source voltage, max.static voltage		-5.5/+20	V
$V_{GSop,on}$	Recommended Operation Values of Gate−to−Source Voltage	turn-on	15...18	V
$V_{GSop,off}$	Recommended Operation Values of Gate−to−Source Voltage	turn-off	-5…0	V
V_{GSS}	Crosstalk Peak Voltage	tp＜10nS	2.8…6.0	V

ELECTRICAL CHARACTERISTICS *(T_{vj}=25°C unless otherwise specified)*

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_C=40mA,T_{vj}=25℃ (tested after 1ms pulse at V_{GS}=+20 V)		2.8	4.1	6.0	V
$R_{DS(on)}$	Static drain-source on-state resistance	I_D=100A, V_{GS}=18V, T_{vj}=25℃			6.8		mΩ
		I_D=100A, V_{GS}=18V, T_{vj}=125℃			10.7		
		I_D=100A, V_{GS}=18V, T_{vj}=150℃			12.6		
		I_D=100A, V_{GS}=15V, T_{vj}=25℃			7.8		
I_{DSS}	Reverse Bias Drain Current	V_{DS}=1200V, V_{GS}=0V			2	100	µA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=20V				400	nA
Q_G	Gate Charge	V_{DS}=850V, V_{GS}=-5/18V			0.35		µC
C_{iss}	Input Capacitance	V_{DS}=800V, V_{GS}=0V, f =100kHz			7730		pF
C_{oss}	Output Capacitance				440		
C_{rss}	Reverse Transfer Capacitance				26		
$R_{G(int)}$	Internal Gate Resistance	f =1MHz			4.7		Ω
$t_{d(on)}$	Turn on Delay Time	V_{DS}=600V,I_D=100A R_{Gon} =20Ω R_{Goff} =3.6Ω V_{GS}=-3/18V di/dt=2400A/µs dv/dt=25000V/µs (T_{vj}=150℃)	T_{vj}=25℃		175		ns
			T_{vj}=150℃		140		
t_r	Rise Time		T_{vj}=25℃		103		
			T_{vj}=150℃		93		
$t_{d(off)}$	Turn off Delay Time		T_{vj}=25℃		87		
			T_{vj}=150℃		110		
t_f	Fall Time		T_{vj}=25℃		25		
			T_{vj}=150℃		25		
E_{on}	Turn on Energy		T_{vj}=25℃		5.2		mJ
			T_{vj}=150℃		4.7		
E_{off}	Turn off Energy		T_{vj}=25℃		1.2		
			T_{vj}=150℃		1.23		
I_{SC}	Short Circuit Current	V_{GS}=-5/15V V_{DD}=800V V_{DSmax}＜V_{DSS} R_G=40Ω	tpsc≤2µs, T_J=25℃		2150		A
			tpsc≤2µs, T_J=150℃		1900		
R_{thJC}	Junction to Case Thermal Resistance				0.32		K /W
R_{thJH}	Junction to Heat sink Thermal Resistance， λ_{Grease}= 6 W/(m·K)				0.335		K /W
T_{Jop}	Operating Temperature			-40		150	℃

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Body DIODE
ABSOLUTE MAXIMUM RATINGS(T_{vj}=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
I_{SD}	DC Body Diode Forward Current	V_{GS}=-3V,T_H=105°C,T_{vj}=175°C	55	A

ELECTRICAL CHARACTERISTICS (T_{vj}=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	I_{SD}=100A , V_{GS}=-3V, T_{vj}=25°C		4.2	5.2	V
		I_{SD}=100A , V_{GS}=-3V, T_{vj}=125°C		3.9		
		I_{SD}=100A , V_{GS}=-3V, T_{vj}=150°C		3.8		

NTC CHARACTERISTICS (T_F=25°C unless otherwise specified)

Symbol	Parameter/Test Conditions		Min.	Typ.	Max.	Unit
R_{25}	Resistance	T_{NTC}=25°C		5		kΩ
$B_{25/50}$	$R_2 = R_{25}$ exp $[B_{25/50}(1/T_2 - 1/(298.15 K))]$			3375		K
△R/R	T_{NTC}=100°C，R_{100}=493Ω		-5		5	%
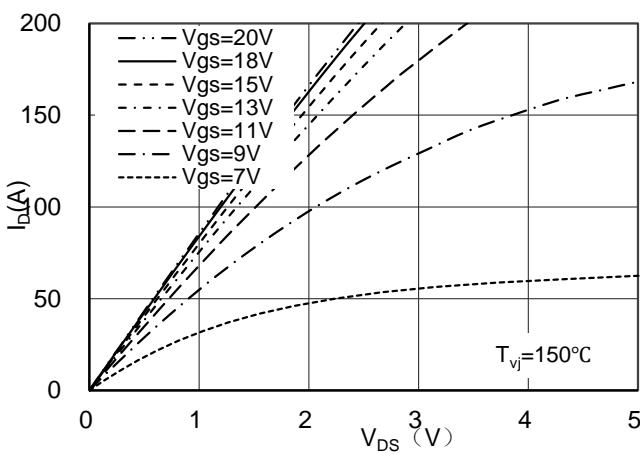
Figure 1. Typical Output Characteristics
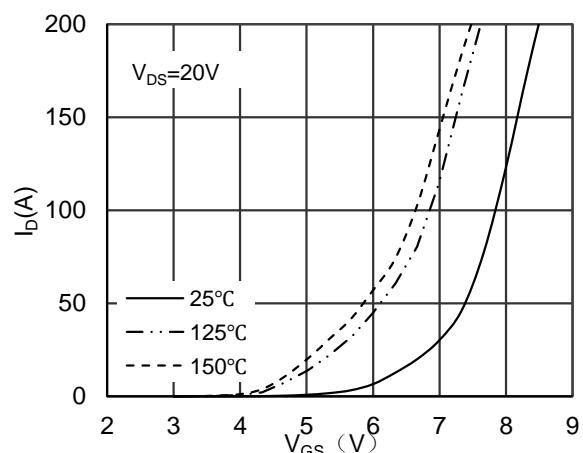
Figure 2. Typical Transfer characteristics
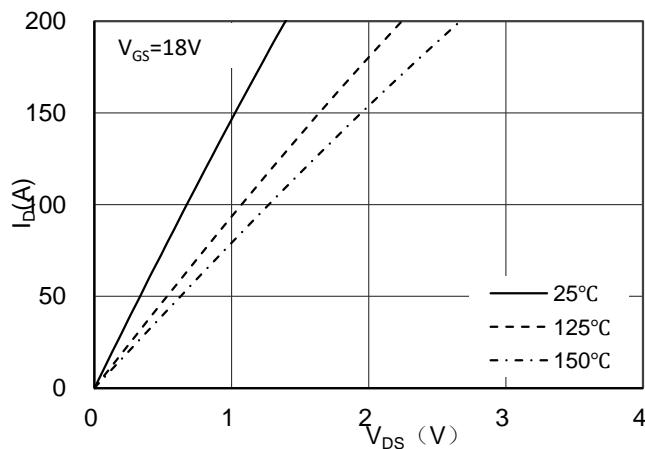
Figure 3. Typical Output Characteristics
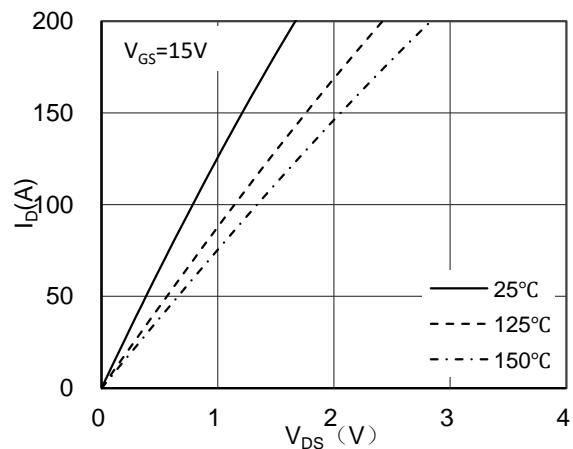
Figure 4. Typical Output Characteristics
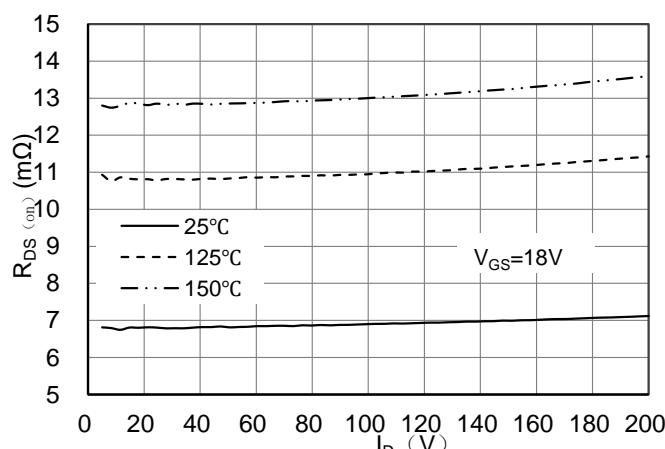
Figure 5. Typical Drain source on-resistance
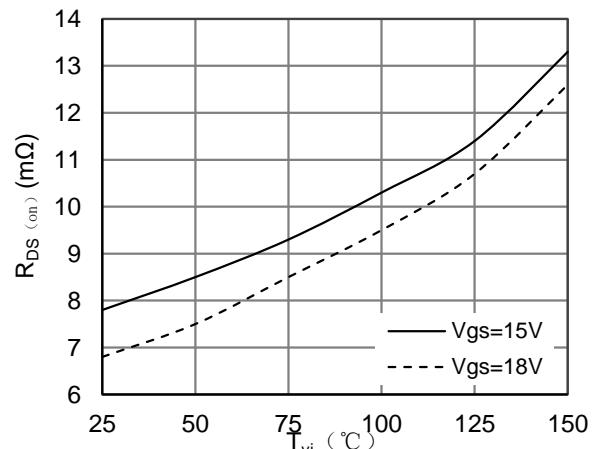
Figure 6. Typical Drain source on-resistance

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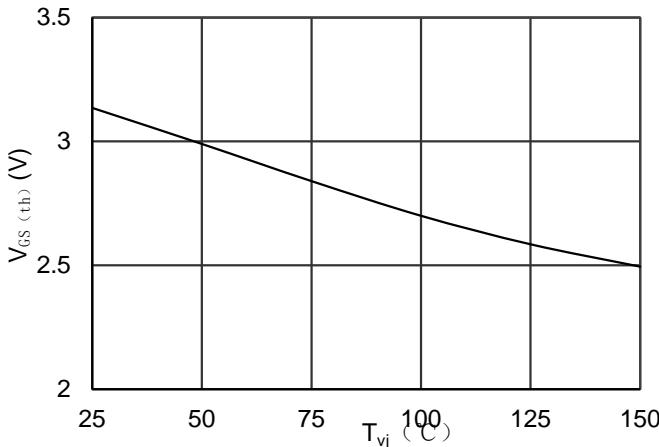
Figure 7. Typical Gate-source threshold voltage
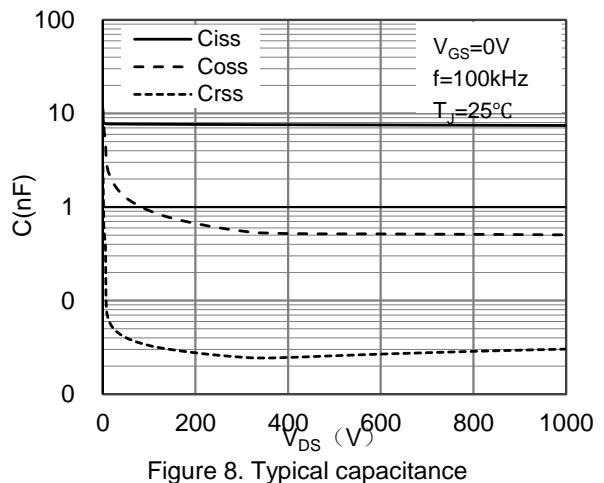

Figure 8. Typical capacitance
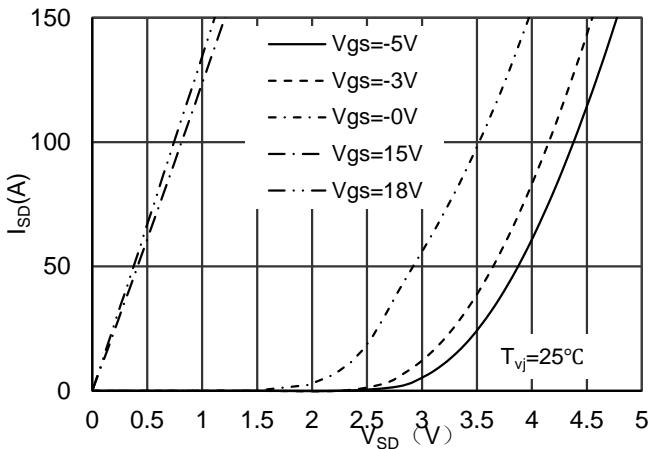
Figure 9. Typical Body Diode Forward
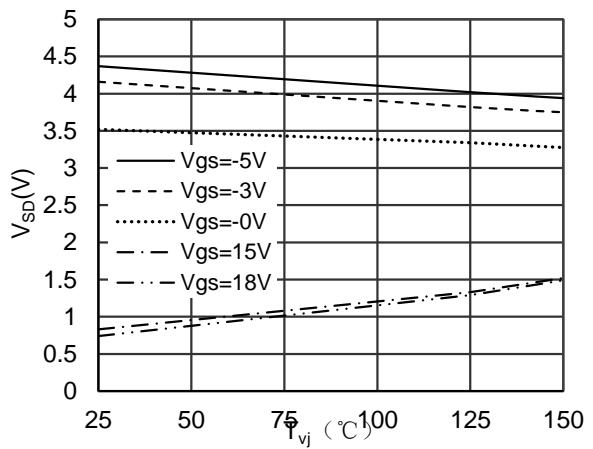
Figure 10. Typical Body Diode Forward
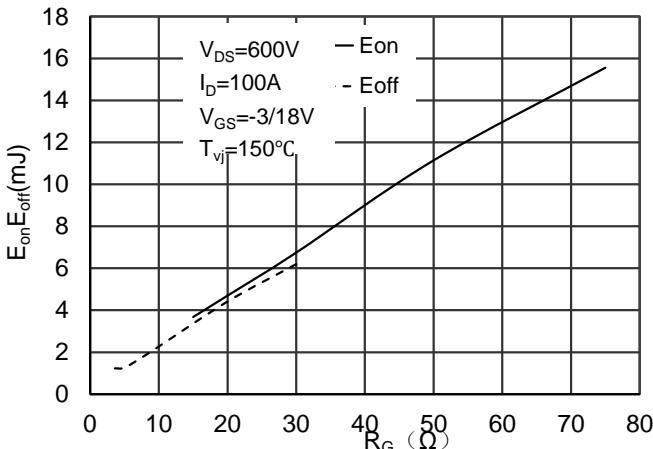
Figure 11. Typical Switching Energy
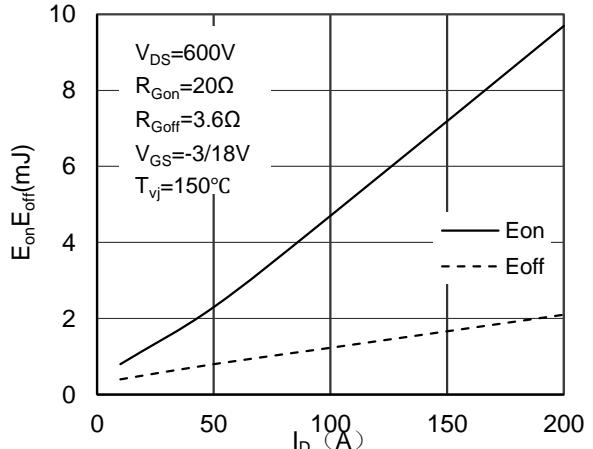
Figure 12. Typical Switching Energy

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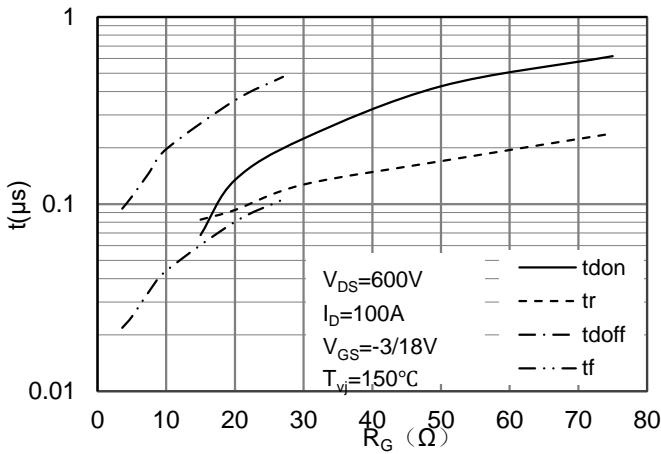
Figure 13. Typical Switching Times
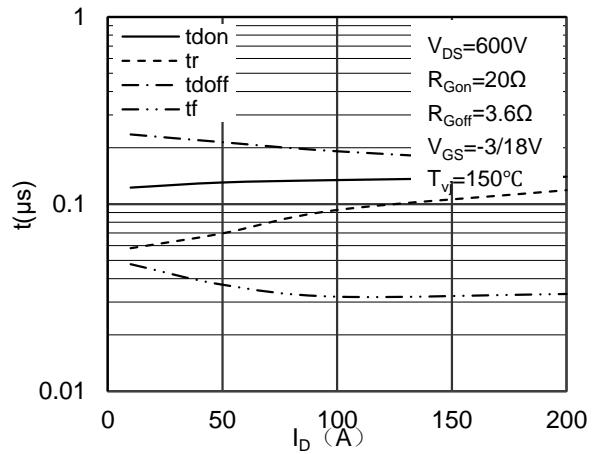

Figure 14. Typical Switching Times
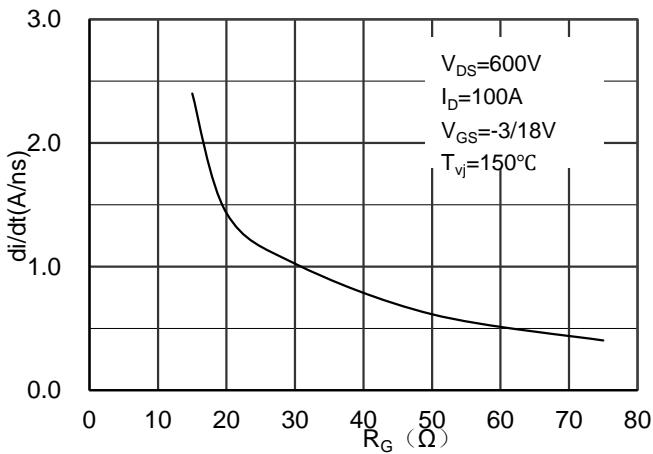

Figure 15.Typical Current slope
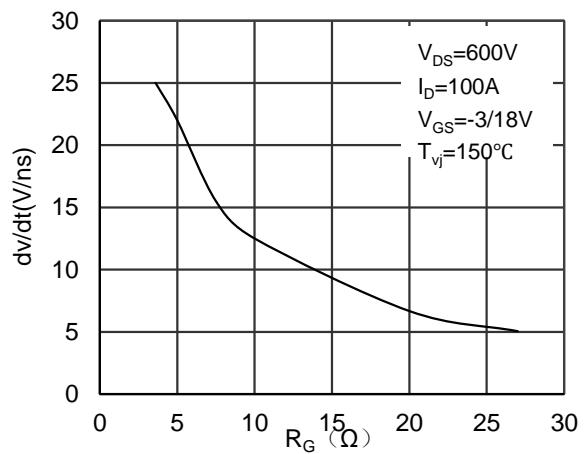
Figure 16.Typical Voltage slope
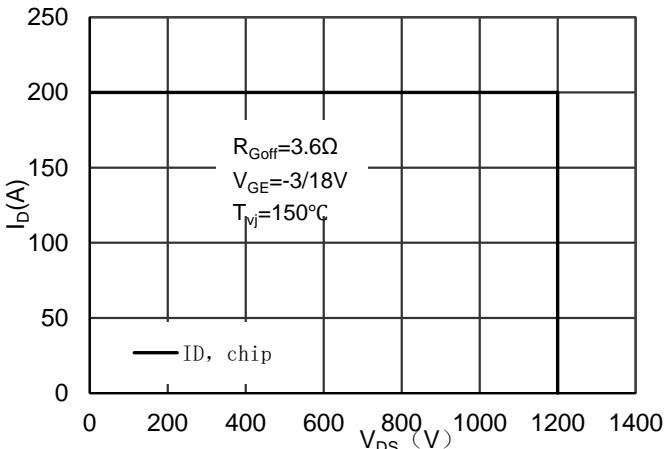
Figure 17. Reverse Biased Safe Operating Area
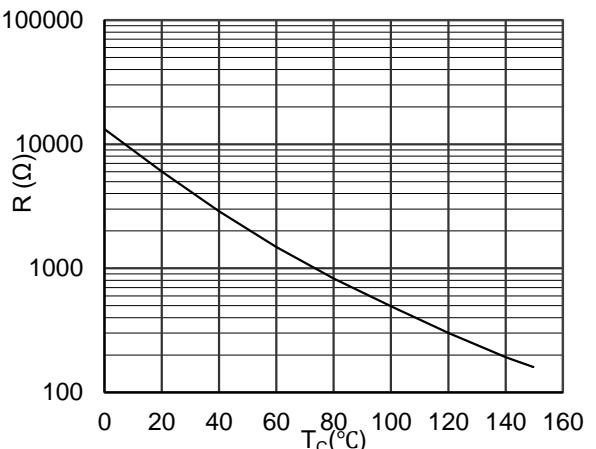

Figure 18. NTC Characteristics

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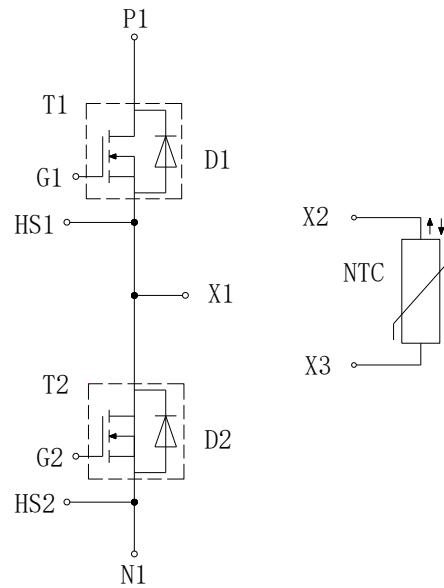
Figure 19. Circuit Diagram
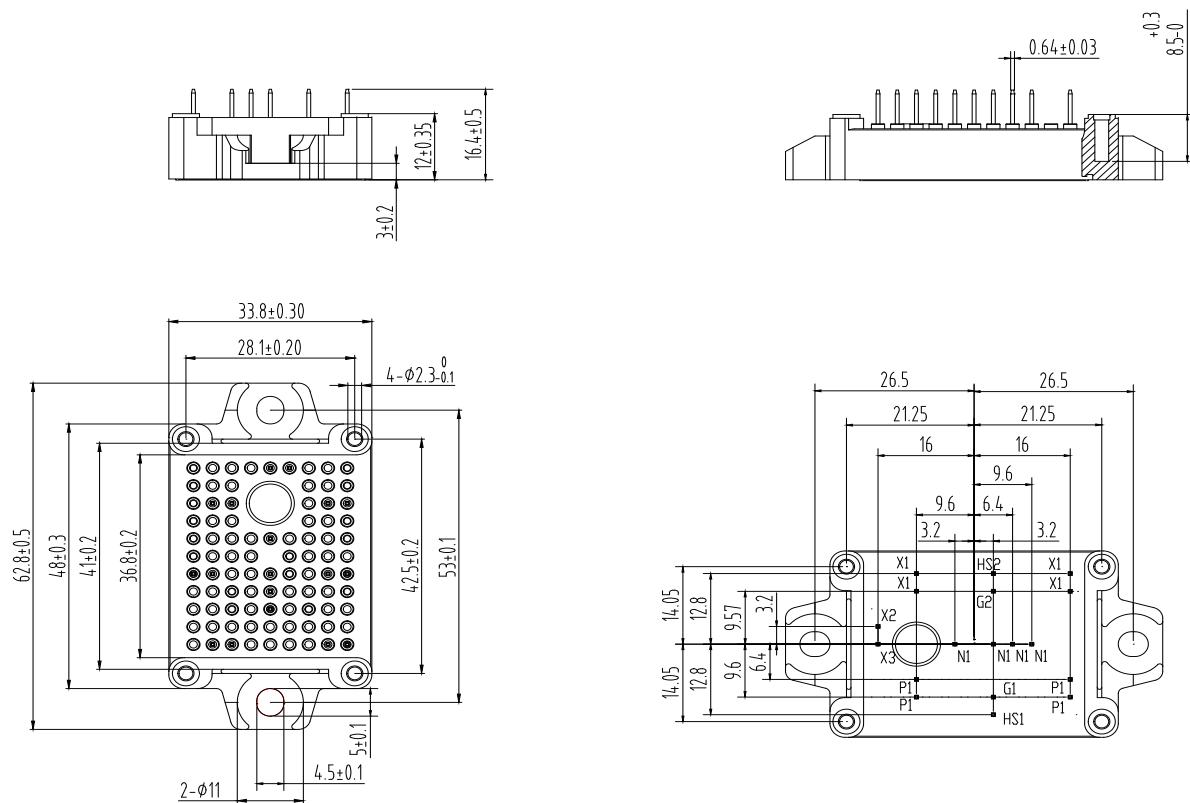
Dimensions in (mm)
Figure 20. Package Outline