

承 认 书

客 户 名 称：兴储世纪科技有限公司

物 料 代 码：_____

客 户 规 格 型 号：_____

承 认 日 期：2021/12/30

供 应 商 名 称：广东恒芯半导体有限公司

供 应 商 规 格 型 号：HM19N20D T0-252 HKZ

承 认 签 章

供 应 商 承 认			客 户 承 认		
工 程 师	审 核	批 准	工 程 师	审 核	批 准
郑玉宝	谢安娜	韩伟坚			
盖章签署			盖章签署		
日 期			日 期		
		2021/12/30			
备注：					

供应商名称：广东恒芯半导体有限公司

供应商地址：深圳市南山区深南大道大冲商务中心 D 座 14A

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200V N-Channel MOSFET

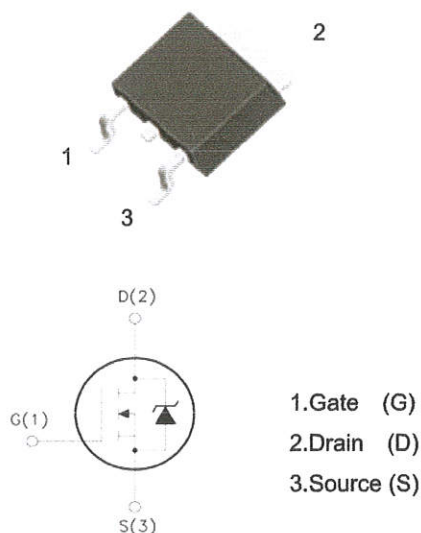
HM19N20D

200V N-Channel MOSFET

Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg= 20nC (Typ.).
- ☐ BVDSS=200V, I_D=19A
- ☐ R_{DS(on)} : 0.18Ω (Max) @V_G=10V
- ☐ 100% Avalanche Tested

TO-252



Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter		Value	Unit
V _{DSS}	Drain-Source Voltage		200	V
I _D	Drain Current	T _C =25°C	19	A
		T _C =100°C	12.3	
V _{GS(TH)}	Gate Threshold Voltage		±30	V
E _{AS}	Single Pulse Avalanche Energy (note1)		180	mJ
I _{AR}	Avalanche Current (note2)		19	A
P _D	Power Dissipation (Ta=25°C)		83	W
T _j	Junction Temperature(Max)		150	°C
T _{stg}	Storage Temperature		-55~+150	
TL	Maximum lead temperature for soldering purpose, 1/8" from case for 5 seconds		300	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance, Junction to Case	-	1.5	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	-	50	°C/W

Electrical Characteristics (Ta=25°C unless otherwise noted)

Electrical Characteristics (Ta=25°C unless otherwise noted)						
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0	200	-	-	V
ΔBV _{DSS} /ΔT _J	Breakdown Voltage Temperature Coefficient	I _D =250μA, Reference to 25°C	-	0.25	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =200V, V _{GS} =0V	-	-	1	μA
		V _{DS} =160V, T _c =125°C			10	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	nA
On Characteristics						
V _{GS(TH)}	Date Threshold Voltage	I _D =250μA, V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =9.5A, V _{GS} =10V	-	-	0.18	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0, f=1.0MHz	-	830	1080	pF
C _{oss}	Output Capacitance		-	200	260	pF
C _{rss}	Reverse Transfer Capacitance		-	25	33	pF
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =100V, I _D =19A R _G =25Ω (Note 3,4)	-	16	40	ns
T _r	Turn-On Rise Time		-	133	275	ns
T _{d(off)}	Turn-Off Delay Time		-	38	85	ns
T _f	Turn-Off Rise Time		-	62	135	ns
Q _g	Total Gate Charge	V _{DS} =160V, V _{GS} =10V, I _D =19A (Note 3,4)	-	20	26	nC
Q _{gs}	Gate-Source Charge		-	5.6	-	nC
Q _{gd}	Gate-Drain Charge		-	10	-	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Max. Diode Forward Current	-	-	-	19	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	76	A
V _{SD}	Diode Forward Voltage	I _D =9.5A	-	-	1.5	V
T _{rr}	Reverse Recovery Time	I _S =9.5A, V _{GS} =0V diF/dt=100A/μs	-	158	-	μs
Q _{rr}	Reverse Recovery Charge	(Note3)	-	1.0	-	μC

Notes : 1, L=1mH, I_{AS}=19A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
 2, Repetitive Rating : Pulse width limited by maximum junction temperature
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
 4, Essentially Independent of Operating Temperature

Typical Characteristics

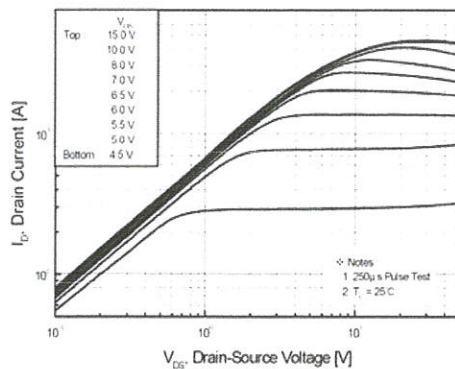


Figure 1. On-Region Characteristics

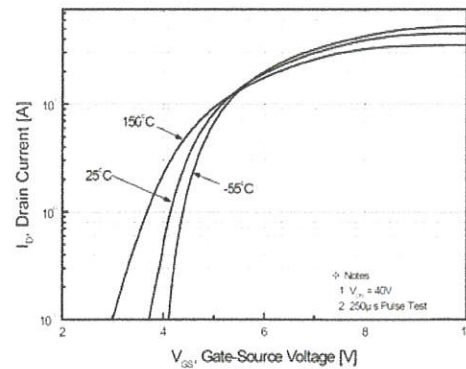


Figure 2. Transfer Characteristics

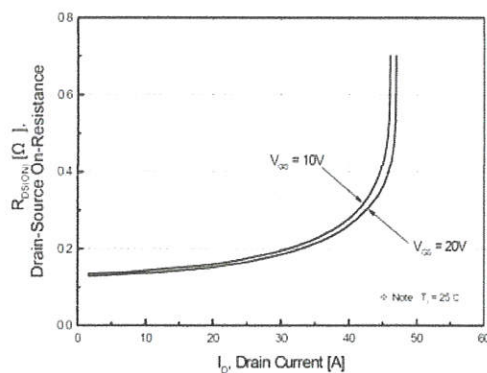


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

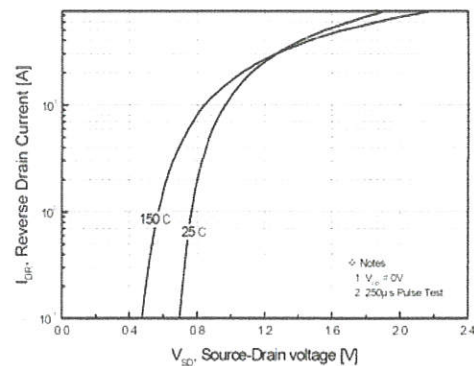


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

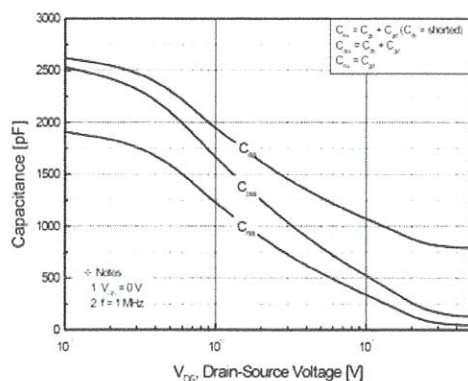


Figure 5. Capacitance Characteristics

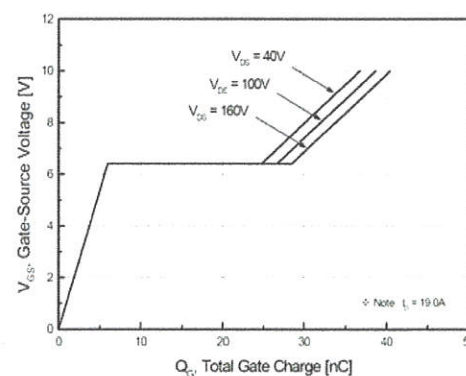


Figure 6. Gate Charge Characteristics

Typical Characteristics (Continued)

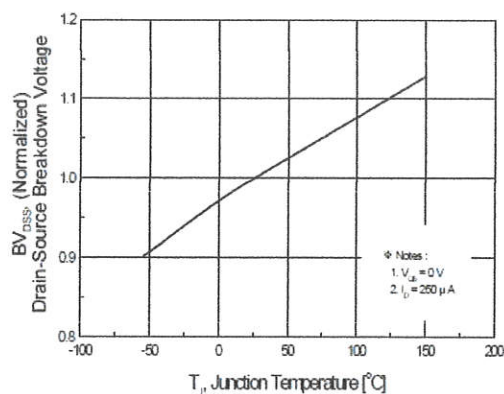


Figure 7. Breakdown Voltage Variation vs Temperature

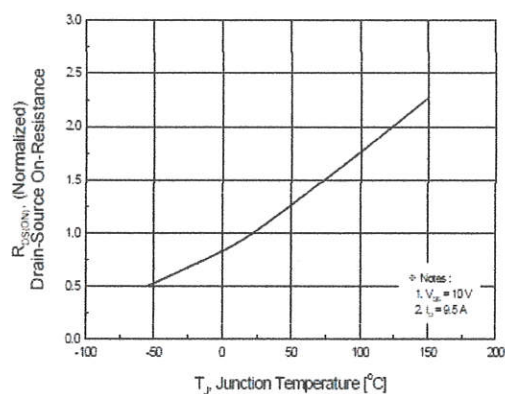


Figure 8. On-Resistance Variation vs Temperature

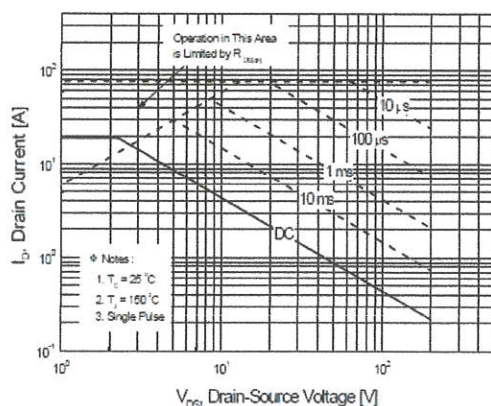


Figure 9. Maximum Safe Operating Area

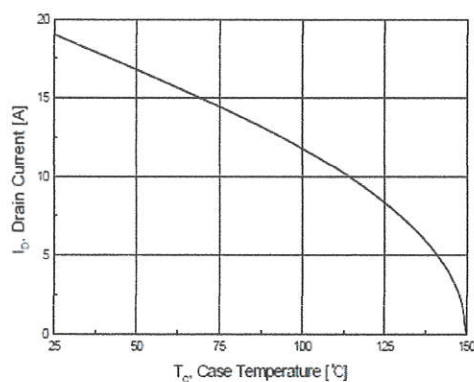


Figure 10. Maximum Drain Current vs Case Temperature

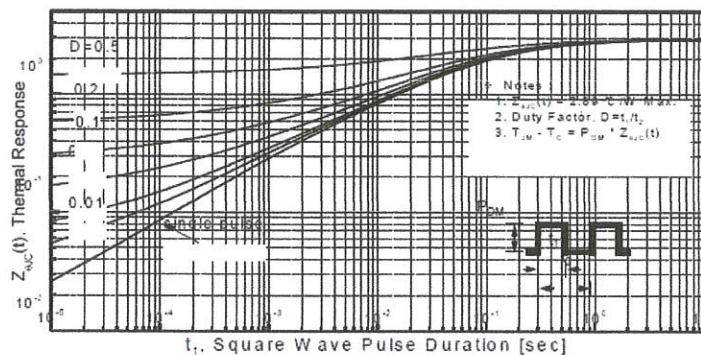
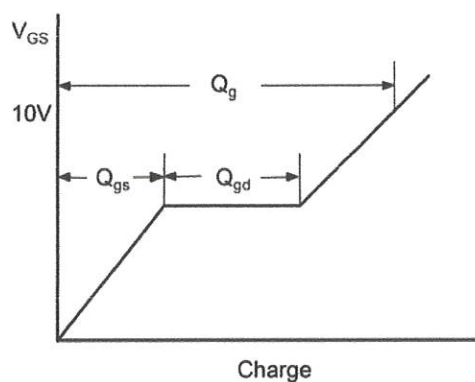
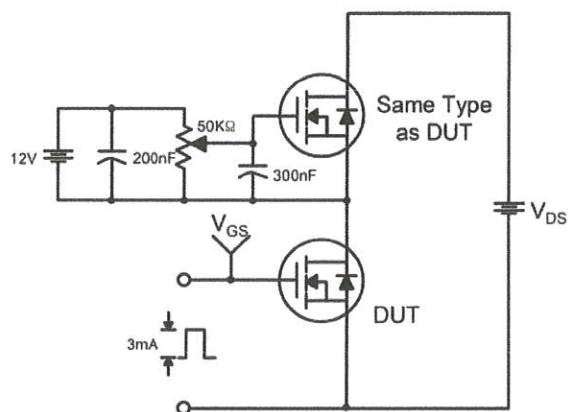
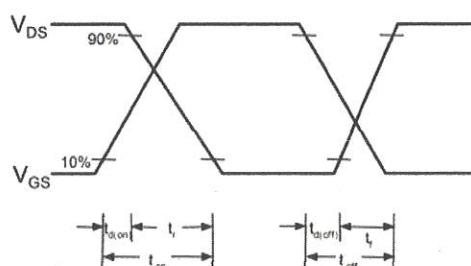
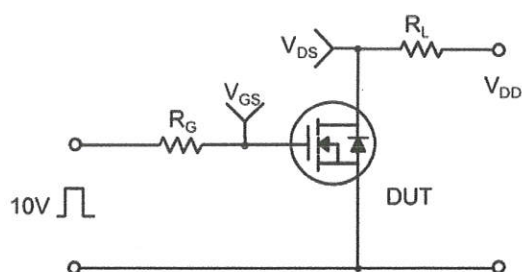


Figure 11. Transient Thermal Response Curve

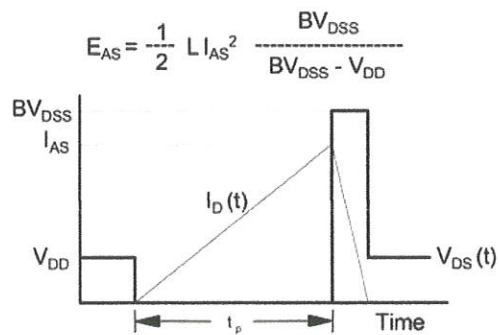
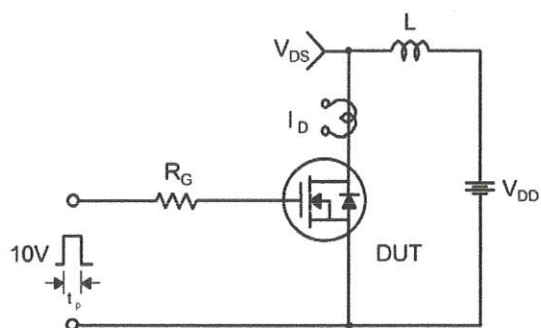
Gate Charge Test Circuit & Waveform



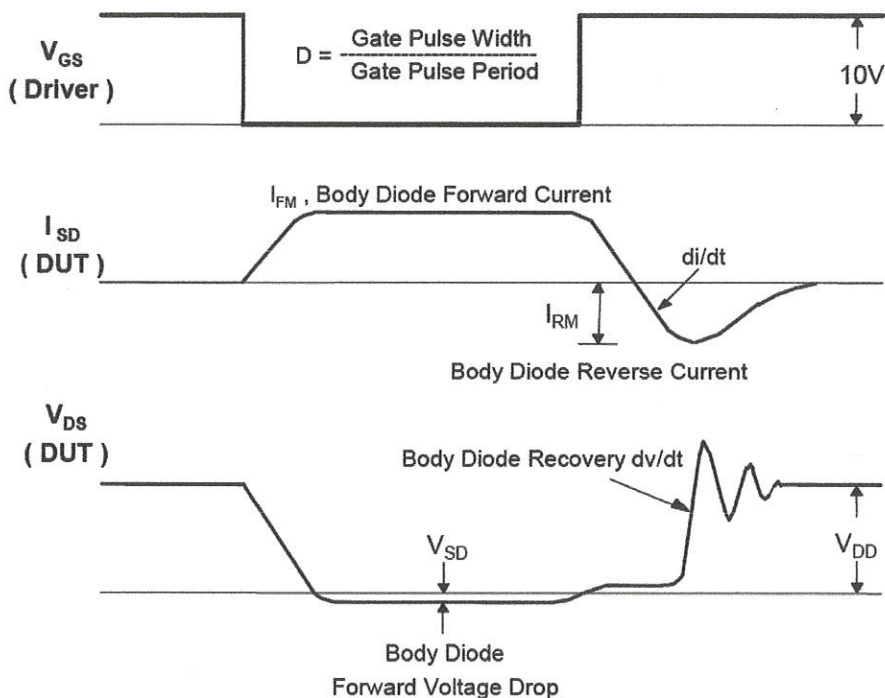
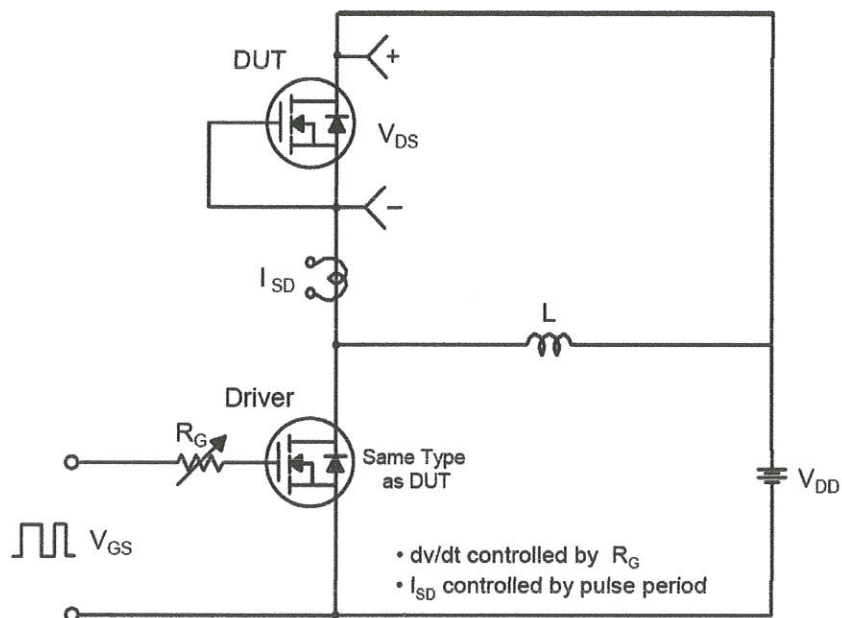
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Peak Diode Recovery dv/dt Test Circuit & Waveform



Package Dimension

TO-252

Unit: mm

