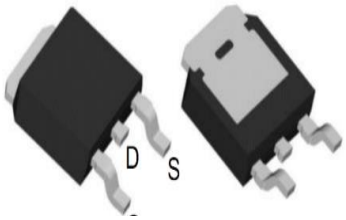
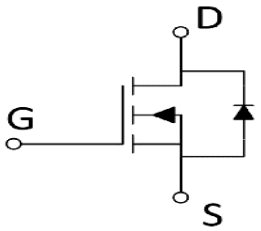
30V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

Features

- V_{DS}=30V,I_D=120A
- $R_{DS(ON)}$=4.5mΩ（TYP.）V_{GS}=10V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

TO-252





Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Ordering Information

Device	Package		Marking	Package Qty.
HMN30H12A4	TO-252	Pb-Free	30H12A4	2500pcs/Reel

Absolute Maximum Ratings (T$_C$=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	30	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	120	A
Continuous Drain Current (T_C=100℃)		85	A
Pulesd Drain Current	I_{DM}	400	A
Maximum Power Dissipation	P_D	125	W
Single pulse avalanche energy	Eas	350	mJ
Operating,Storage Temperature Range	T_J,T_{STG}	-55~175	℃

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=250μA	1	1.6	3	V
Drain-SourceOn-stageResistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A	-	3.5	4.5	mΩ
		V_{GS}=4.5V,I_D=20A	-	-	-	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	1.25	-	℃/ W

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=15V	-	4120	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	498	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	456	-	
Gate Resistance	R_g	f=1MHz	-	1.2	-	Ω
Total Gate Charge	Q_g	V_{DS}=15V	-	79	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=10V	-	9	-	
Gate Drain Charge	Q_{gd}	I_D=20A	-	18	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=10V	-	11	-	ns
Rise time	t_r	V_{DS}=15V	-	10	-	
Turn-off delay Time	$t_{d(off)}$	R_L=0.75Ω	-	38	-	
Fall time	t_f	R_G=3Ω	-	11	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{SD}=1A	-	-	1.2	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_{SD}=20A	-	58	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=500A/μs	-	115	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

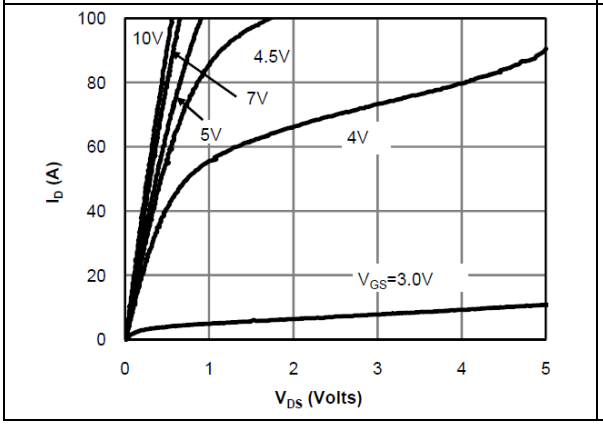


Figure 2. Transfer Characteristics

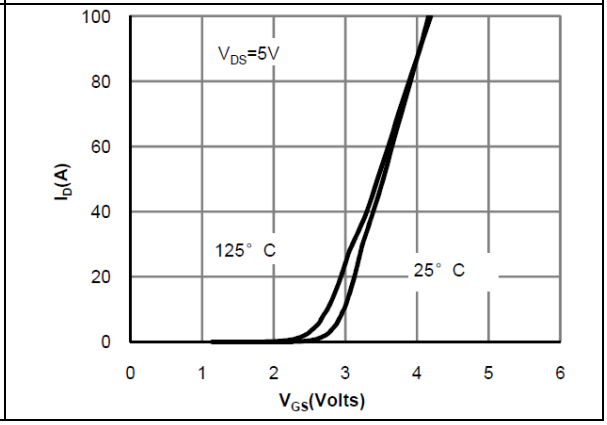


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

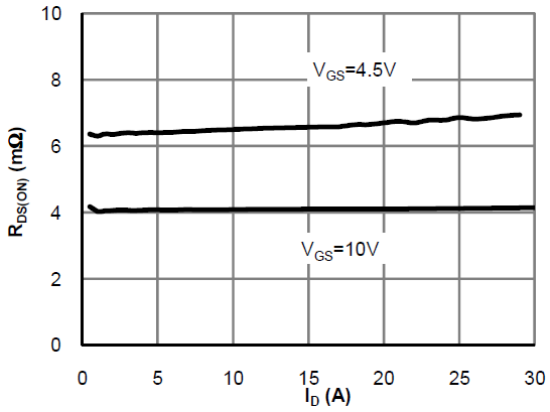


Figure 4. On-Resistance vs. Junction Temperature

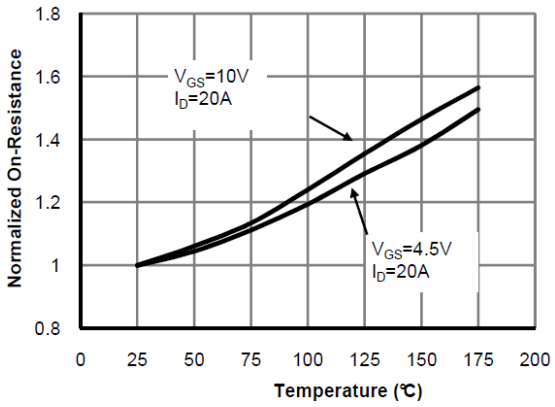


Figure 5. On-Resistance vs. Gate-Source Voltage

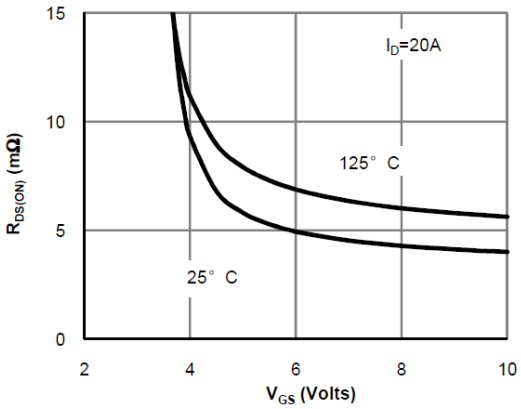


Figure 6. Body-Diode Characteristics

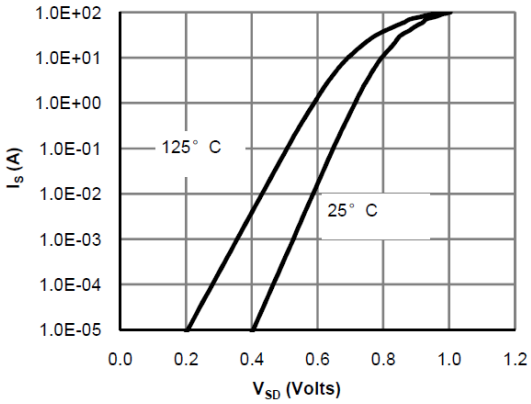


Figure 7. Gate-Charge Characteristics

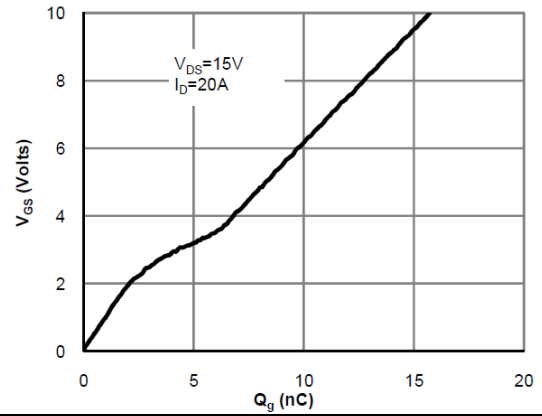


Figure 8. Capacitance Characteristics

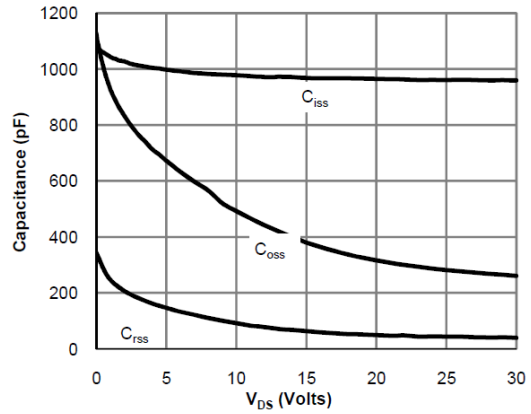


Figure 9. Maximum Forward Biased Safe Operating Area

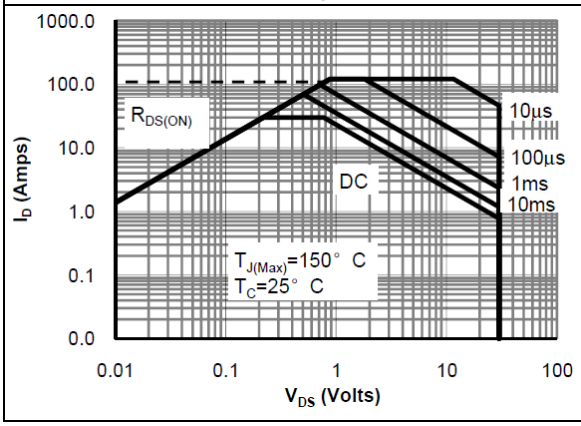


Figure 10. Single Pulse Power Rating Junction-to-Case

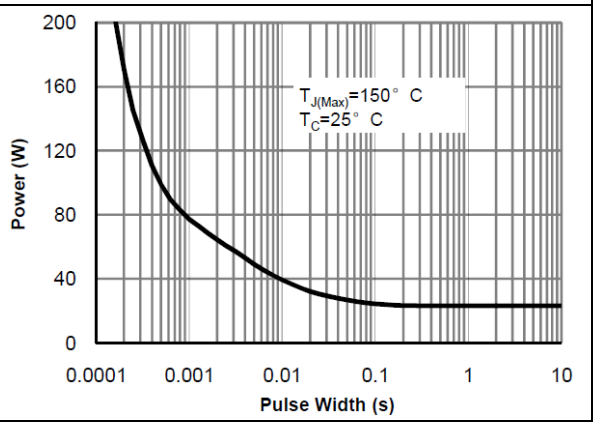


Figure 11. Normalized Maximum Transient Thermal Impedance