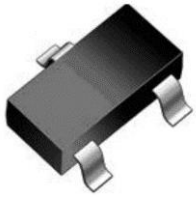
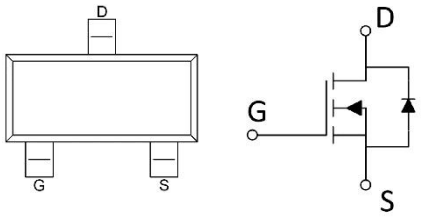
60V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

Features

- V_{DS}=60V,I_D=5A
- $R_{DS(ON)}$=32mΩ（TYP.）V_{GS}=10V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

SOT23-3L





Applications

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

Ordering Information

Device	package	Device Marking	Package Qty.
HMN6005	SOT-23-3L	6005	3000/PCS

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	60	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	5	A
Continuous Drain Current (T_C=100℃)		3	A
Pulesd Drain Current	I_{DM}	28	A
Maximum Power Dissipation (T_C=25℃)	P_D	2.2	W
Operating,Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V, V_{GS}=0V	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=250μA	-	-	2.5	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=5.8A	-	25	32	mΩ
		V_{GS}=4.5V,I_D=5A	-	32	50	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	60	-	℃/ W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	83.5	-	℃/ W

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=15V	-	1050	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	65	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	55	-	
Gate Resistance	R_g	f=1MHz	-	-	-	Ω
Total Gate Charge	Q_g	V_{DS}=15V	-	26	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=4.5V	-	5.7	-	
Gate Drain Charge	Q_{gd}	I_D=5.8A	-	5.2	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=10V	-	8.4	-	ns
Rise time	t_r	V_{DS}=15V	-	8.6	-	
Turn-off delay Time	$t_{d(off)}$	R_L=2.7Ω	-	36	-	
Fall time	t_f	R_G=3Ω	-	5	-	

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}=5A	-	-	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=100A/μs	-	-	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

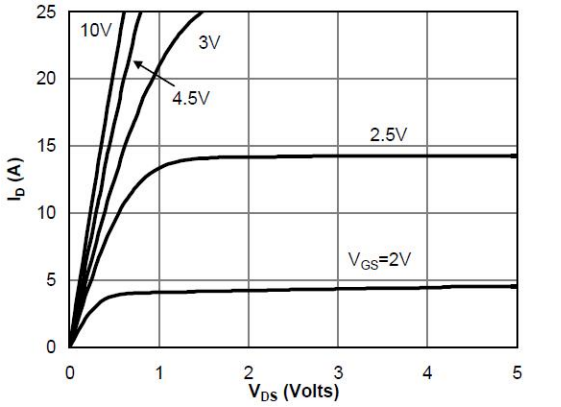


Figure 2. Transfer Characteristics

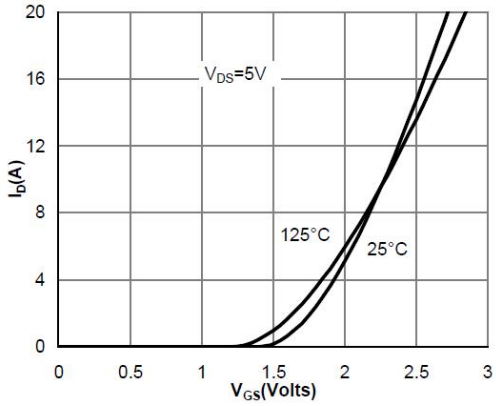


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

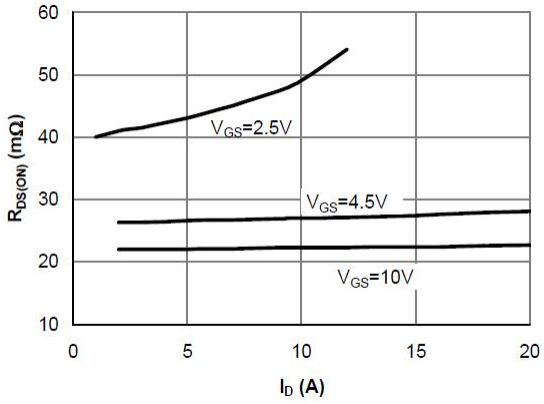


Figure 4. On-Resistance vs. Junction Temperature

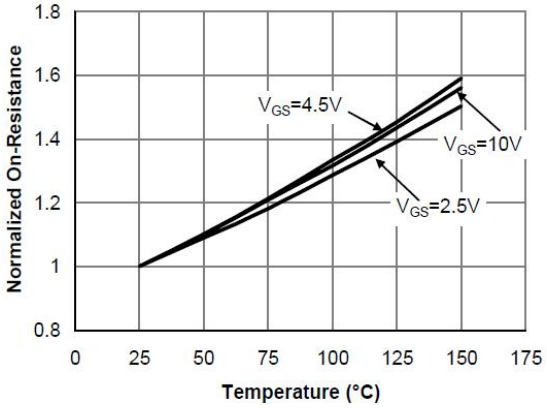


Figure 5. On-Resistance vs. Gate-Source Voltage

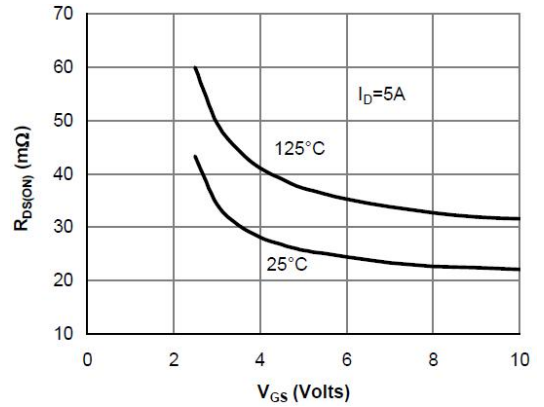


Figure 6. Body-Diode Characteristics

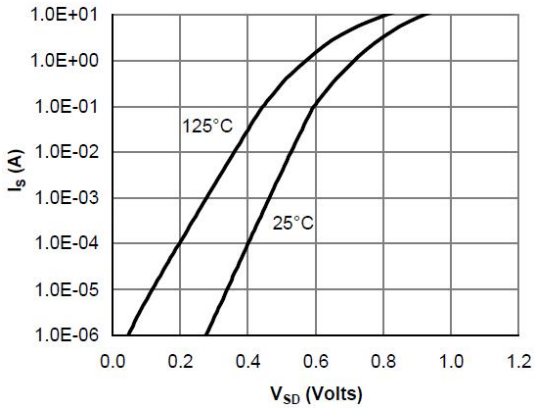


Figure 7. Gate-Charge Characteristics

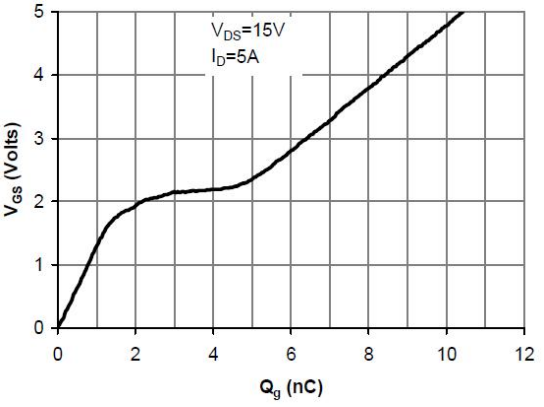


Figure 8. Capacitance Characteristics

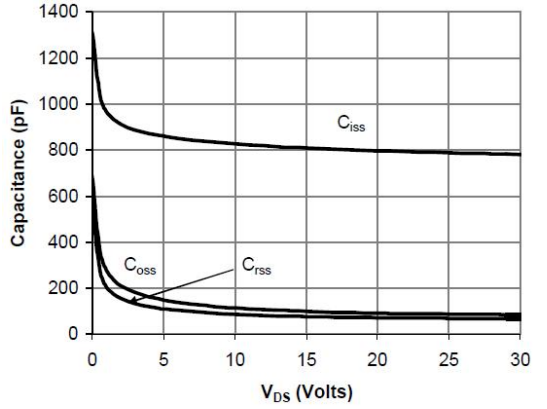


Figure 9. Maximum Forward Biased Safe Operating Area

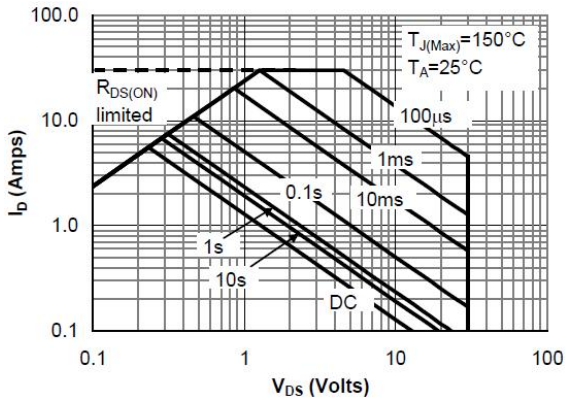
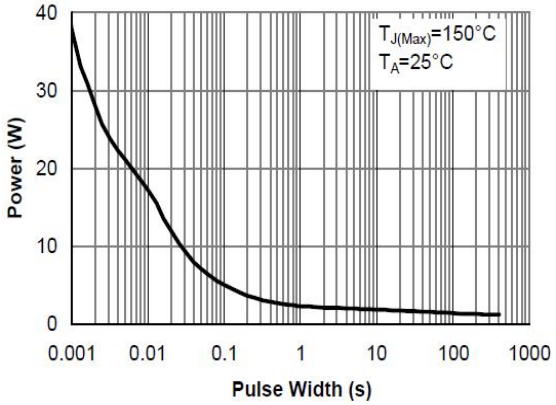
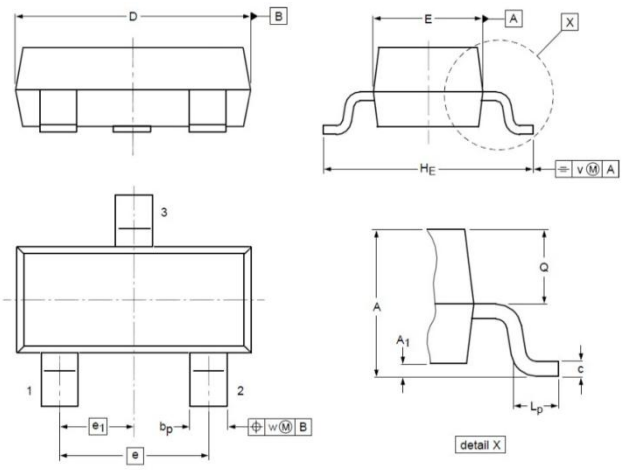


Figure 10. Single Pulse Power Rating Junction-to-Ambient



Physical Dimensions

SOT23-3L



符号	尺寸(mm)			符号	尺寸(mm)		
	最小值	典型值	最大值		最小值	典型值	最大值
A	0.90	1.03	1.10	A1	0.01	0.05	0.10
bp	0.38	0.42	0.48	c	0.09	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	-	1.90	-	e1	-	0.95	-
HE	2.10	2.40	2.50	Lp	0.15	0.23	0.45
Q	0.45	0.49	0.55	v	-	0.20	-
w	-	0.10	-				