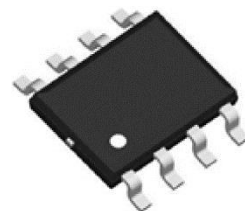


N-Channel Enhancement Mode MOSFET

Features

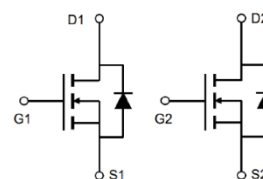
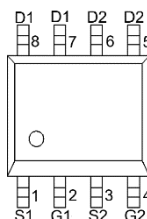
- $V_{DS}=20V, I_D=8A$
- $R_{DS(ON)}=18m\Omega$ (TYP.) $V_{GS}=4.5V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

SOP8



Applications

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



Ordering Information

Device	Package		Marking	Package Qty.
HMN9928AS	SOP8	Pb-Free	9928AS	3000pcs/Reel

Absolute Maximum Ratings ($T_C=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	20	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	± 10	V
Continuous Drain Current ($T_C=25^{\circ}C$)	I_D	8	A
Continuous Drain Current ($T_C=100^{\circ}C$)		5.5	A
Pulsed Drain Current	I_{DM}	30	A
Single Pulsed Avalanche Energy	E_{AS}	-	mJ
Maximum Power Dissipation ($T_C=25^{\circ}C$)	P_D	1.25	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	8.8	-	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	-	100	-	$^{\circ}C/W$

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	-	1.2	V
Drain-Source On-stage Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=1A$	-	15	25	m Ω
		$V_{GS}=2.5V, I_D=1A$	-	18	35	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$	-	650	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	140	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	80	-	
Gate Resistance	R_g	$f=1MHz$	-	1.9	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$	-	10	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=10V$	-	1.5	-	
Gate Drain Charge	Q_{gd}	$I_D=20A$	-	1.6	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$	-	8	-	ns
Rise time	t_r	$V_{DS}=15V$	-	9	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=3.5\Omega$	-	15	-	
Fall time	t_f	$R_G=6.8\Omega$	-	4	-	

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}	$V_{GS}=0V, I_{SD}=20A$	-	17	-	ns
Reverse Recovery Charge	Q_{rr}	$d_i/d_t=100A/\mu s$	-	25	-	nC

Electrical Characteristics Diagrames

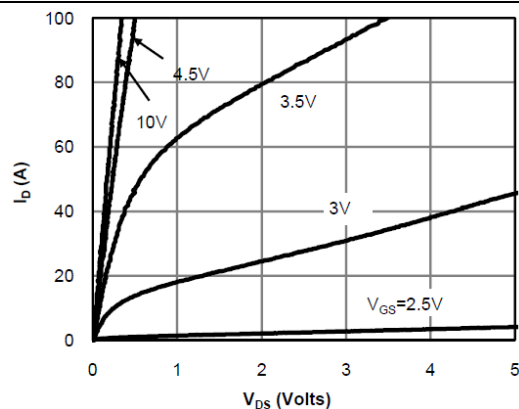
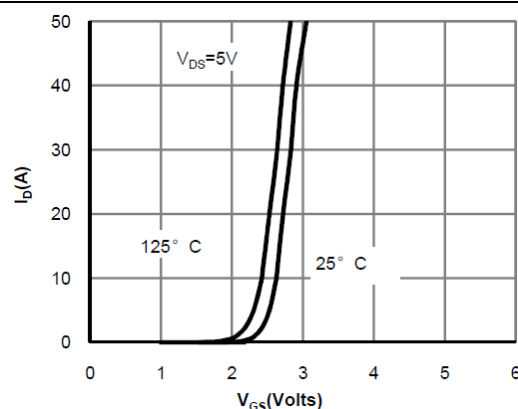
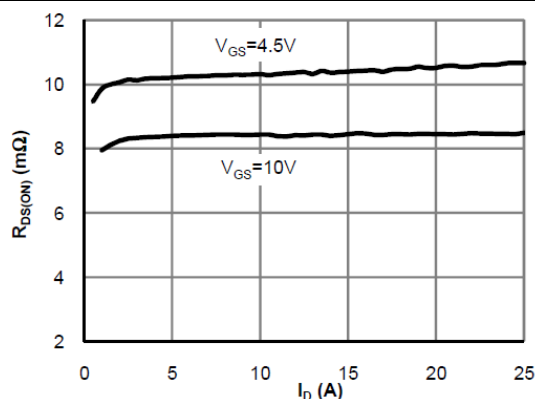
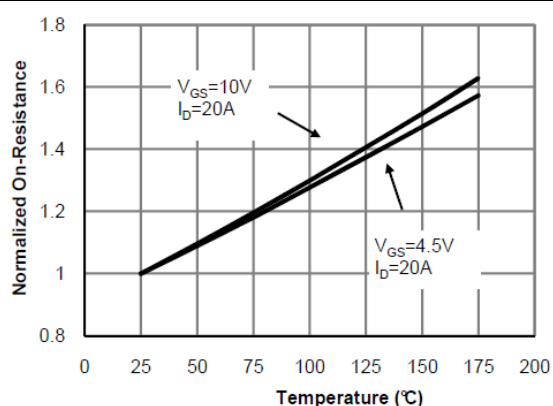
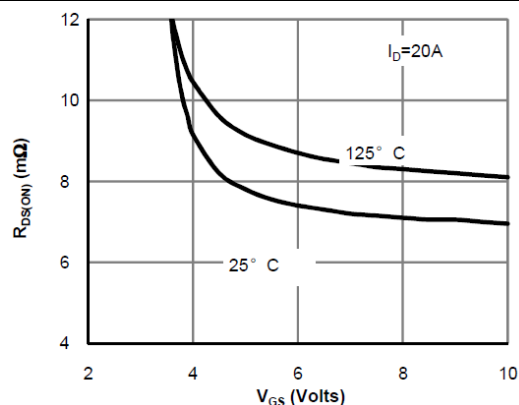
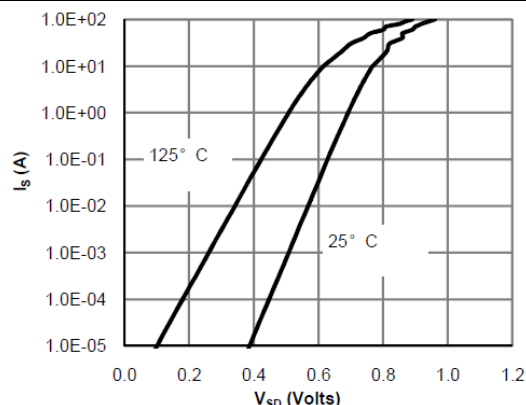
Figure 1. On-Regin Characteristics

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

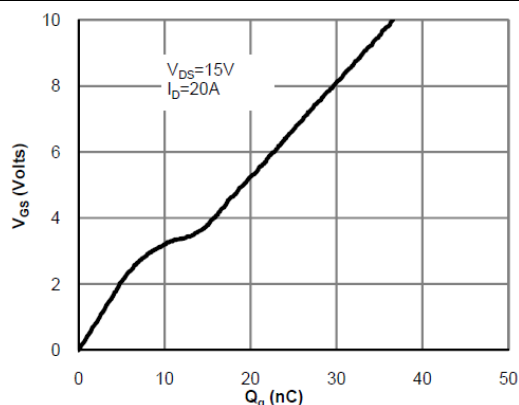


Figure 8. Capacitance Characteristics

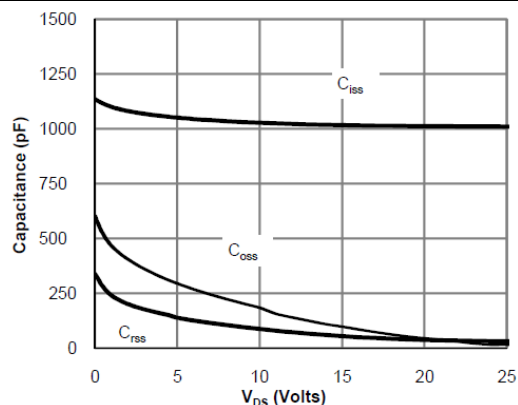


Figure 9. Maximum Forward Biased Safe Operating Area

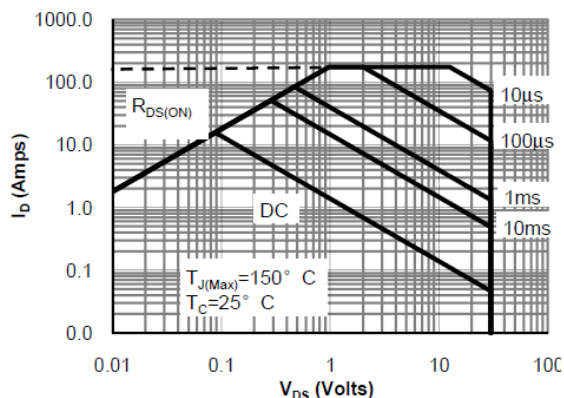


Figure 10. Single Pulse Power Rating Junction-to-Ambient

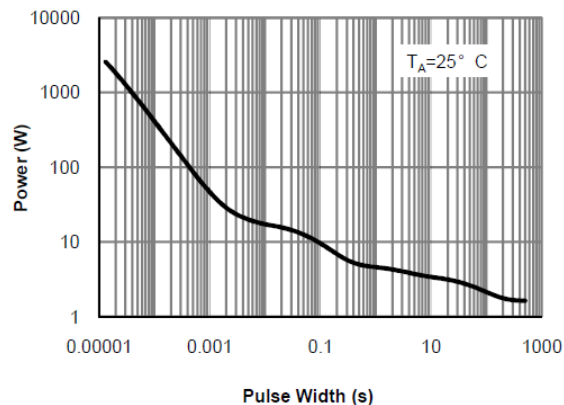
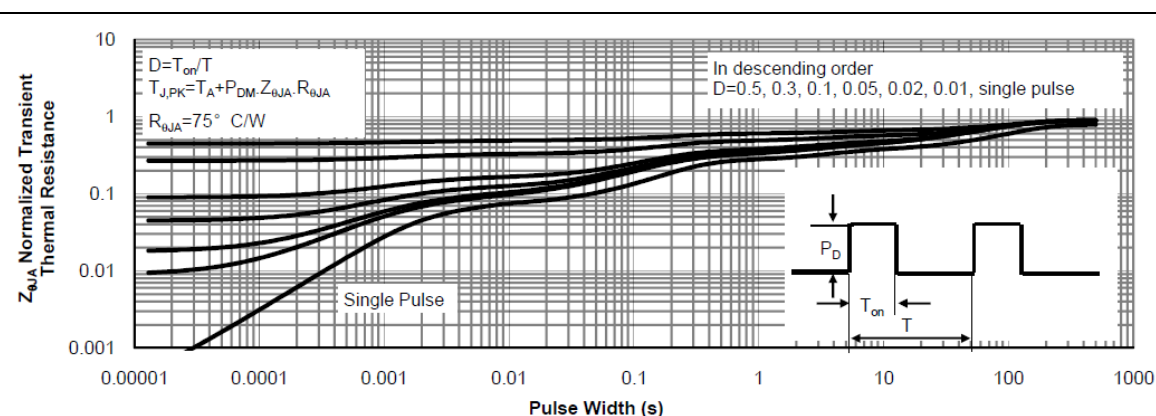


Figure 11. Normalized Maximum Transient Thermal Impedance



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