

-40V_{DS}/±20V_{GS} P-Channel Enhancement Mode MOSFET

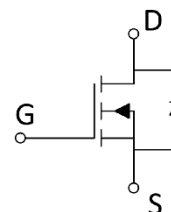
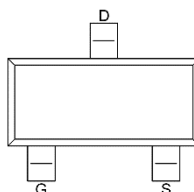
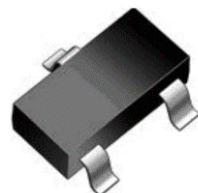
Features

- $V_{DS}=-40V, I_D=-5A$
- $R_{DS(ON)}=78m\Omega$ (TYP.) $V_{GS}=10V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

Applications

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

SOT23



Ordering Information

Device	package	Device Marking	Package Qty.
HM2319	SOT23	**	3000/PCS

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	-40	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	±20	V
Continuous Drain Current ($T_C=25^{\circ}C$)	I_D	-5	A
Continuous Drain Current ($T_C=100^{\circ}C$)		3.6	A
Pulsed Drain Current	I_{DM}	8	A
Maximum Power Dissipation ($T_C=25^{\circ}C$)	P_D	1.25	W
Maximum Power Dissipation ($T_C=100^{\circ}C$)		0.8	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}C$

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.3	2.1	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5.8A$	-	-	80	m Ω
		$V_{GS}=4.5V, I_D=5A$	-	-	-	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	60	-	$^{\circ}C/W$
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	125	-	$^{\circ}C/W$

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1MHz$	-	310	-	pF
Output capacitance	C_{oss}		-	22	-	
Reverse transfer capacitance	C_{rss}		-	15	-	
Gate Resistance	R_g	$f=1MHz$	-	-	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$ $V_{GS}=4.5V$ $I_D=5.8A$	-	5.4	-	nC
Gate Source Charge	Q_{gs}		-	1.1	-	
Gate Drain Charge	Q_{gd}		-	1.6	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=15V$ $R_L=2.7\Omega$ $R_G=3\Omega$	-	41	-	ns
Rise time	t_r		-	22	-	
Turn-off delay Time	$t_{d(off)}$		-	25	-	
Fall time	t_f		-	32	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	0.85	1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=5A$ $d_i/d_t=100A/\mu s$	-	-	-	ns
Reverse Recovery Charge	Q_{rr}		-	-	-	nC

Electrical Characteristics Diagrames

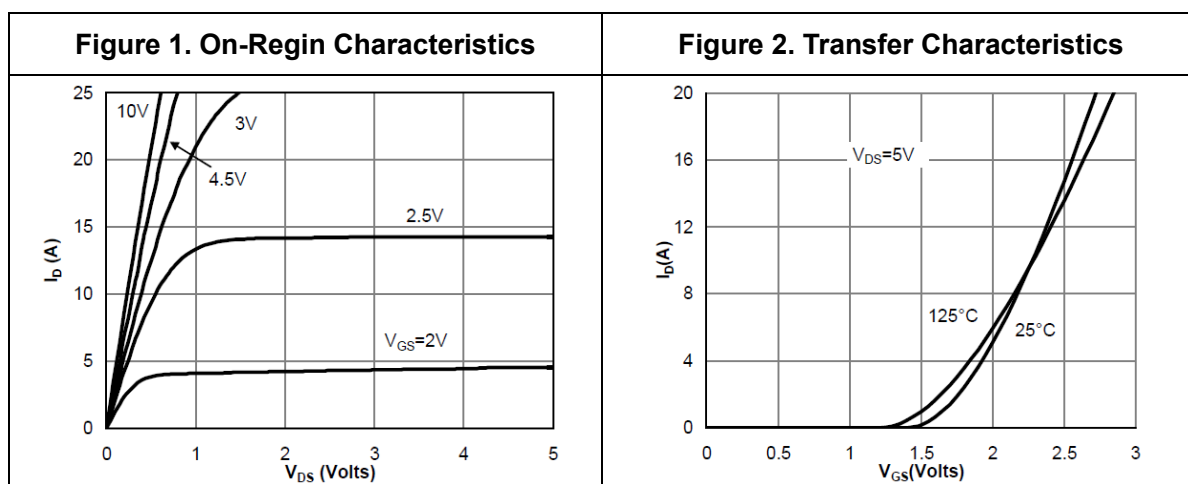


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

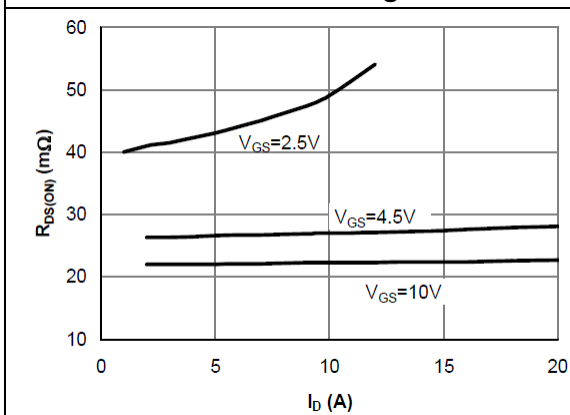


Figure 4. On-Resistance vs. Junction Temperature

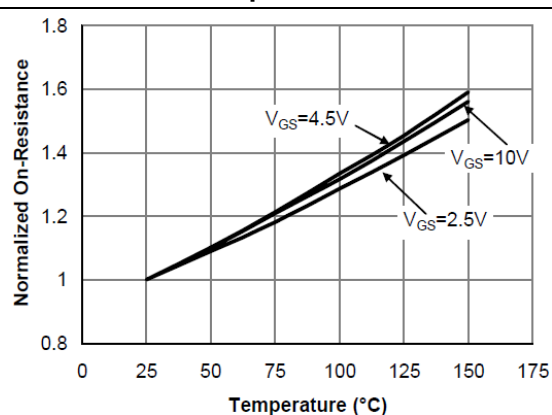


Figure 5. On-Resistance vs. Gate-Source Voltage

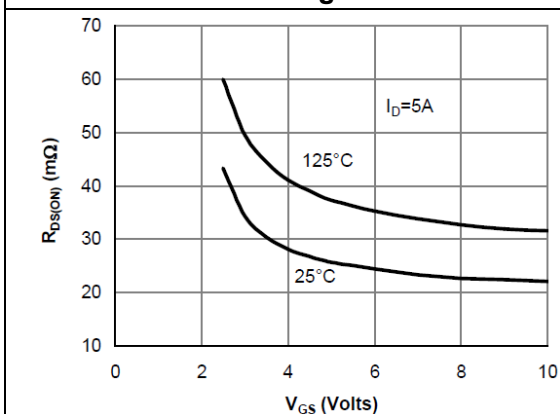


Figure 6. Body-Diode Characteristics

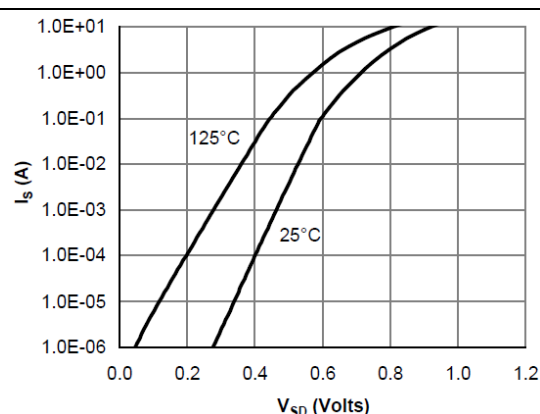


Figure 7. Gate-Charge Characteristics

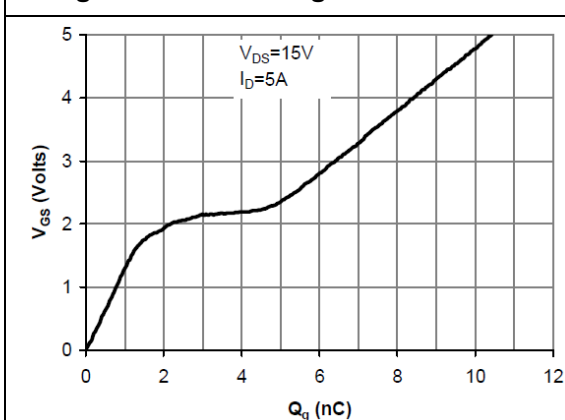


Figure 8. Capacitance Characteristics

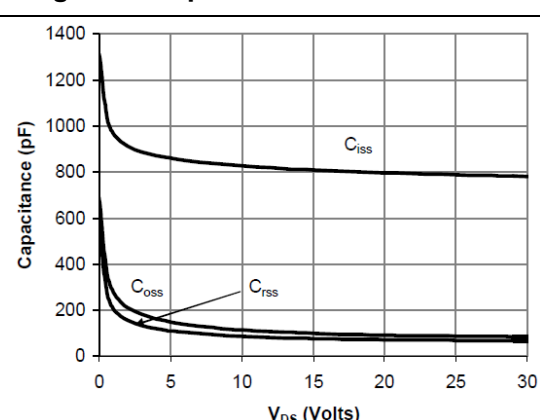


Figure 9. Maximum Forward Biased Safe Operating Area

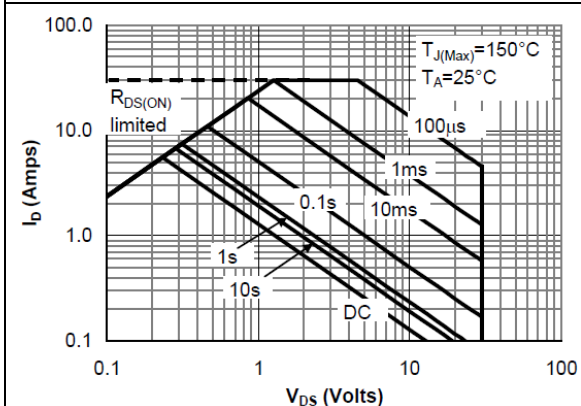


Figure 10. Single Pulse Power Rating Junction-to-Ambient

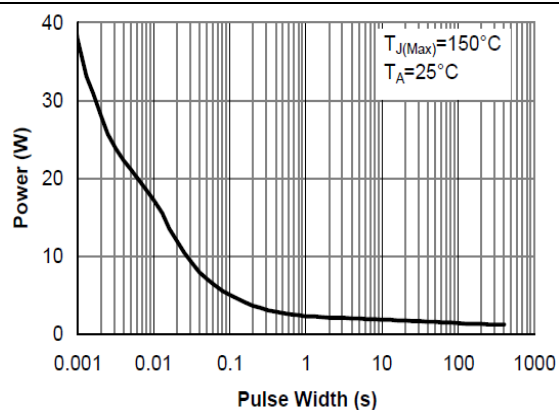
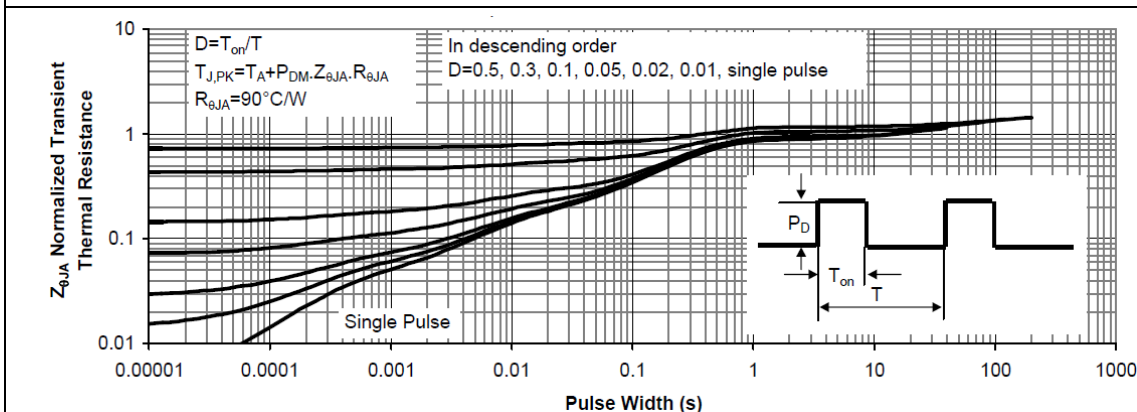


Figure 11. Normalized Maximum Transient Thermal Impedance



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