

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

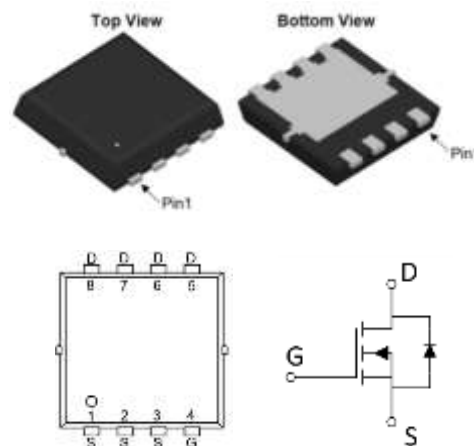
Features

- V_{DS}=40V, I_D=140A
- R_{DS(ON)}=2.5mΩ (TYP.) V_{GS}=10V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

Applications

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

PDFN5060



Ordering Information

Device	package	Device Marking	Package Qty.
JMSH0403AG	PDFN5060	SH0403AG	5000/PCS

Absolute Maximum Ratings (T_C=25°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°C)	I _D	140	A
Continuous Drain Current (T _C =100°C)		80	A
Pulsed Drain Current	I _{DM}	560	A
Single Pulsed Avalanche Energy	E _{AS}	200	mJ
Maximum Power Dissipation (T _C =25°C)	P _D	83	W
Operating, Storage Temperature Range	T _J , T _{STG}	-55~150	°C

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	35	-	-	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	2.2	3	4	V
Drain-Source On-stage Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	2.0	3.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	4	6	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	2.3	-	$^{\circ}C/W$

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$	-	5580	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	714	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	262	-	
Gate Resistance	R_g	$f=1MHz$	-	1.5	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$	-	36.8	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=10V$	-	5.3	-	
Gate Drain Charge	Q_{gd}	$I_D=20A$	-	5	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$	-	11	-	ns
Rise time	t_r	$V_{DS}=15V$	-	8	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=0.75\Omega$	-	46	-	
Fall time	t_f	$R_G=3\Omega$	-	8	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	-	1.1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=20A$	-	25	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=500A/\mu s$	-	50	-	nC

Electrical Characteristics Diagrames

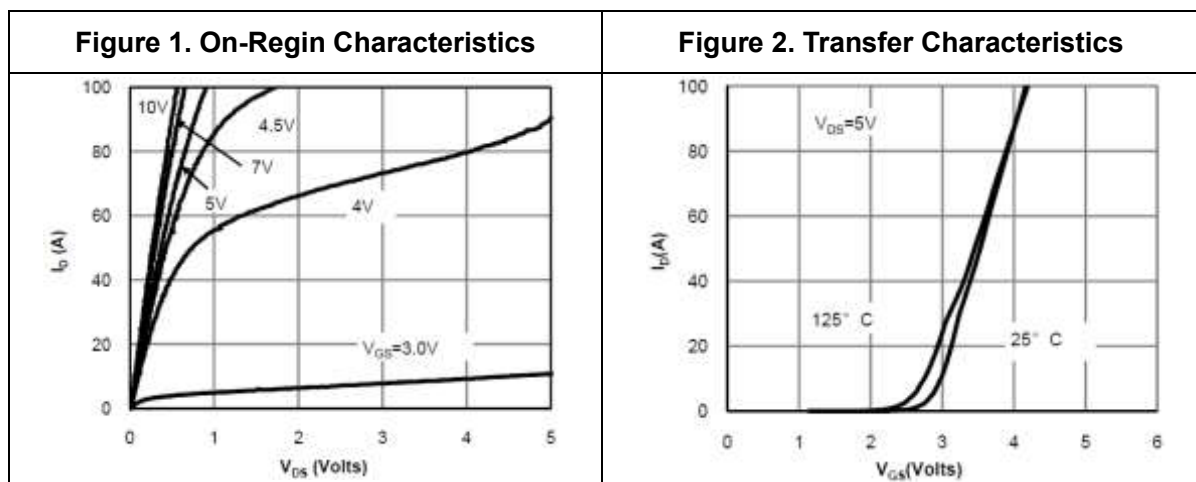


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

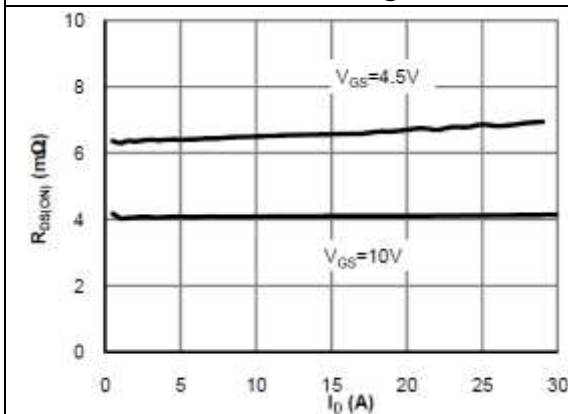


Figure 4. On-Resistance vs. Junction Temperature

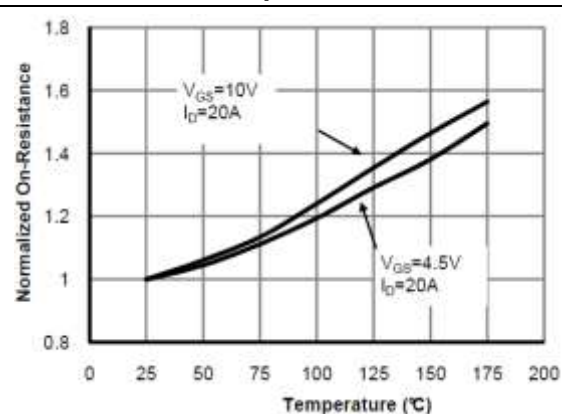


Figure 5. On-Resistance vs. Gate-Source Voltage

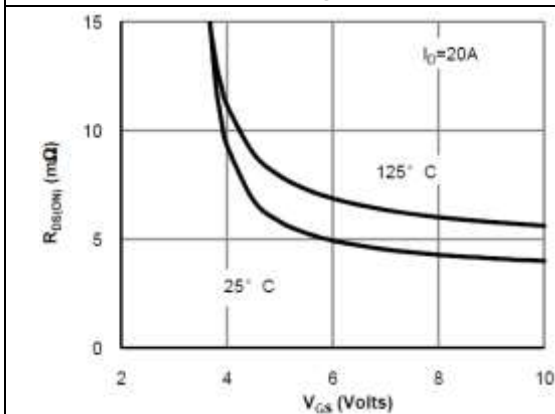


Figure 6. Body-Diode Characteristics

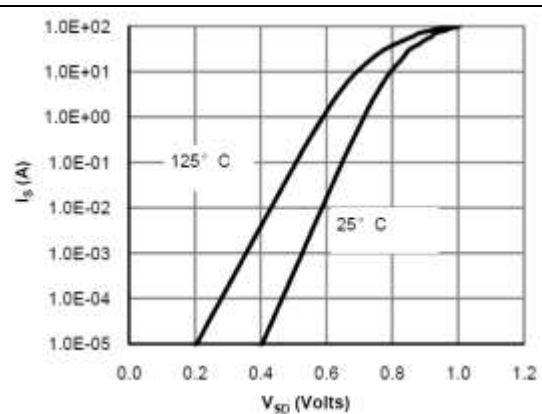


Figure 7. Gate-Charge Characteristics

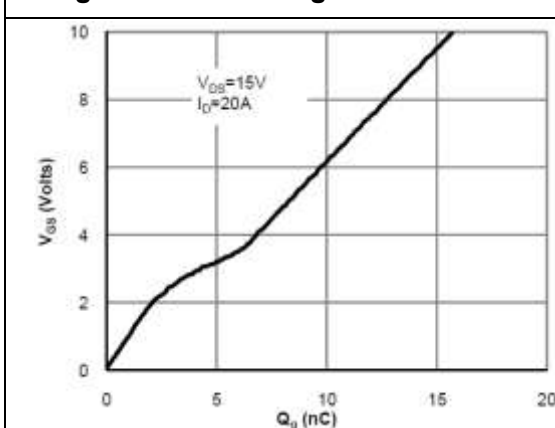


Figure 8. Capacitance Characteristics

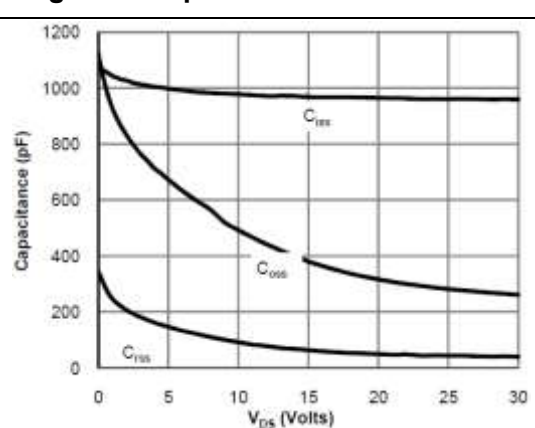


Figure 9. Maximum Forward Biased Safe Operating Area

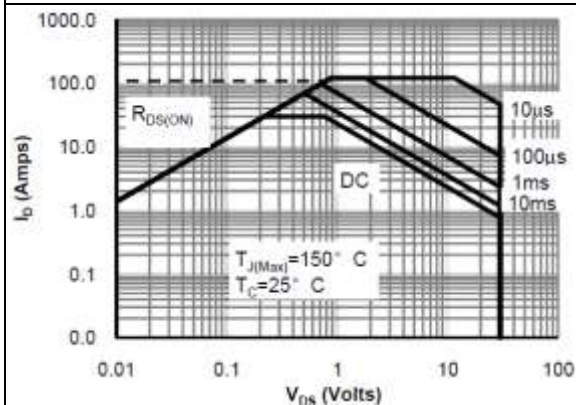


Figure 10. Single Pulse Power Rating Junction-to-Case

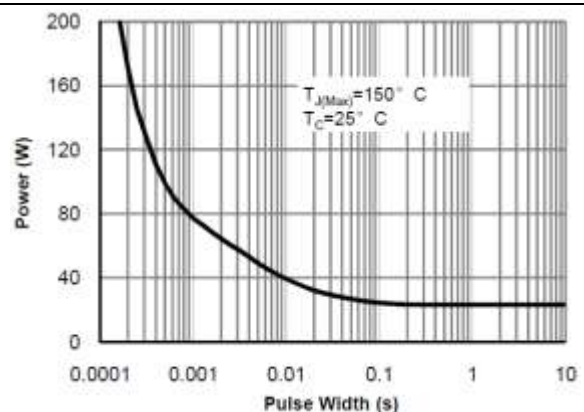
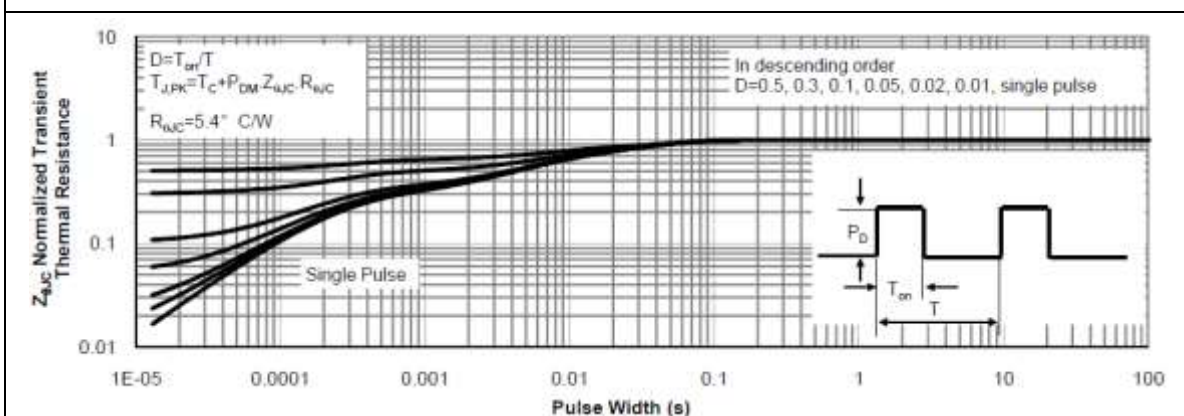


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

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	1.00	1.10	E1	5.70	5.75	5.80
b	0.33	0.41	0.51	E2	3.38	3.58	3.78
c	0.20	0.25	0.30	H	0.41	0.51	0.61
D	4.80	4.90	5.00	K	1.10	-	-
D1	3.61	3.81	3.96	L	0.51	0.61	0.71
e	1.27BSC			L1	0.06	0.13	0.20
E	5.90	6.00	6.10	θ	0°	-	12°

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