



40V 2.7mΩ N-Ch Power MOSFET

Features

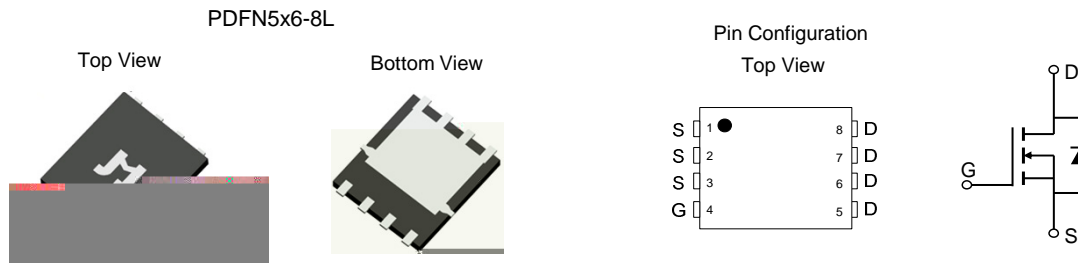
- Ultra-low $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant

Product Summary

Parameter	Value	Unit
V_{DS}	40	V
$V_{GS(th)}$	2.8	V
I_D (@ $V_{GS} = 10V$) ⁽¹⁾	117	A
$R_{DS(ON)}$ (@ $V_{GS} = 10V$)	2.7	mΩ

Applications

- Power Management in Computing, CE, IE 4.0, Communications
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Load Switching, Quick/Wireless Charging, Motor Driving

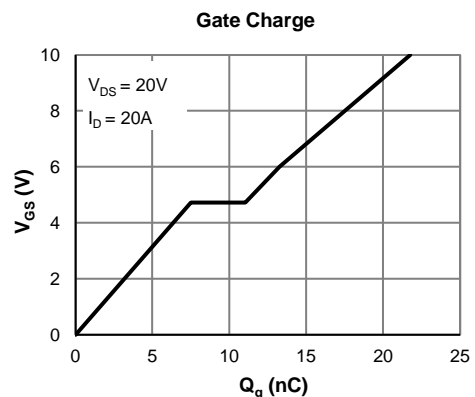
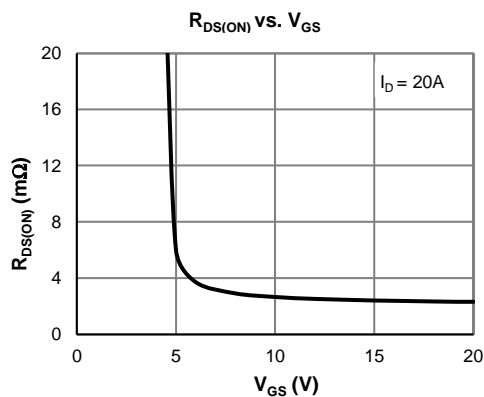


Ordering Information

Device	Package	# of Pins	Marking	MSL	T_J (°C)	Media	Quantity (pcs)
JMSH0403AG-13	PDFN5x6-8L	8	SH0403A	1	-55 to 150	13-inch Reel	5000

Absolute Maximum Ratings (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
	V_{DS}		V
	V_{GS}		V
	I_{DM}		A
	E_{AS}		mJ
	T_J		



Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$, $V_{GS} = 0\text{V}$ $V_{DS} = 32\text{V}$, $V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$	40		1.0 5.0	V
Gate Threshold Voltage	I_{GSS} $V_{GS(th)}$		2.2	2.8	3.4	nA V
	$R_{DS(ON)}$			2.7	3.4	mΩ
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{V}$, $I_D = 20\text{A}$		94		S
Diode Forward Voltage	V_{SD} I_S	I_S $T_C = 25^\circ\text{C}$		0.70	1.0	V A

DYNAMIC PARAMETERS ⁽⁵⁾

Input Capacitance	C_{iss}			1542		pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{V}$, $V_{DS} = 20\text{V}$, $f = 1\text{MHz}$		1020		pF
Reverse Transfer Capacitance	C_{rss}			43		pF
Gate Resistance	R_g	$V_{GS} = 0\text{V}$, $V_{DS} = 0\text{V}$, $f = 1\text{MHz}$		3.8		Ω

SWITCHING PARAMETERS ⁽⁵⁾

Total Gate Charge (@ $V_{GS} = 10\text{V}$)	Q_g			22		nC
Total Gate Charge (@ $V_{GS} = 6.0\text{V}$)	Q_g	$V_{GS} = 0$ to 10V		13.3		nC
Gate Source Charge	Q_{gs}	$V_{DS} = 20\text{V}$, $I_D = 20\text{A}$		7.5		nC
Gate Drain Charge	Q_{gd}			3.5		nC
Turn-On DelayTime	$t_{D(on)}$			9.0		ns
Turn-On Rise Time	t_r	$V_{GS} = 10\text{V}$, $V_{DS} = 20\text{V}$		13.5		ns
Turn-Off DelayTime	$t_{D(off)}$	$R_L \leq 1.0\Omega$, $R_{GEN} = 3\Omega$		21		ns
Turn-Off Fall Time	t_f			4.7		ns
Body Diode Reverse Recovery Charge	t_{rr} Q_{rr}	$I_F = 20\text{A}$, $dI_F/dt = 100\text{A}/\mu\text{s}$		37 23		ns nC

Thermal Performance

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	52	60	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.6	2.0	$^\circ\text{C}/\text{W}$

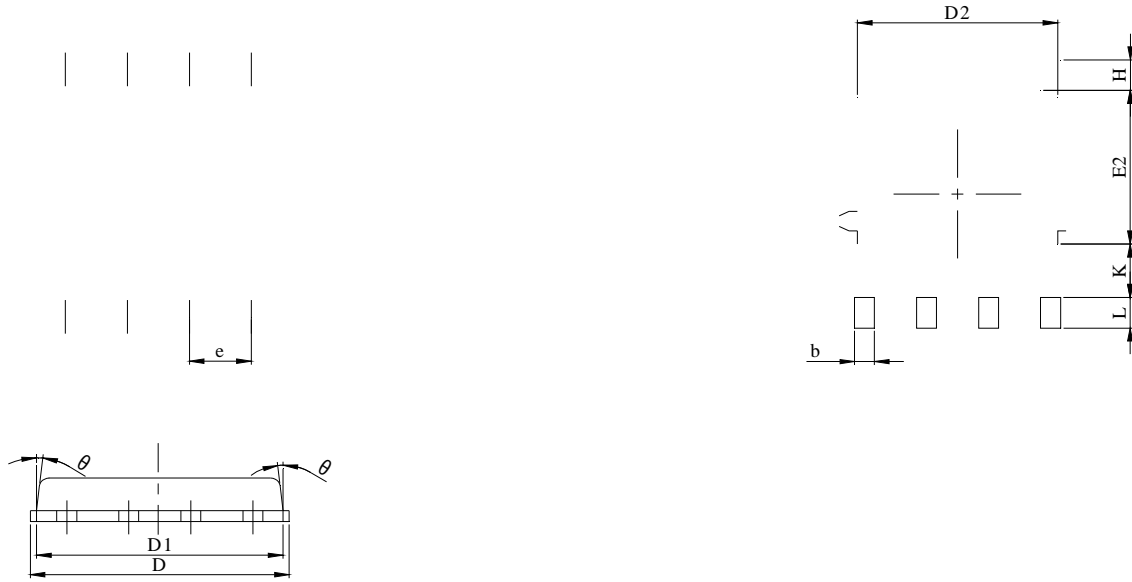
Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. This single-pulse measurement was taken under $T_{J_Max} = 150^\circ\text{C}$.
3. E_{AS} of 216 mJ is based on starting $T_J = 25^\circ\text{C}$, $L = 3.0\text{mH}$, $I_{AS} = 12\text{A}$, $V_{GS} = 10\text{V}$, $V_{DD} = 20\text{V}$; 100% test at $L = 0.3\text{mH}$, $I_{AS} = 23\text{A}$.
4. The power dissipation P_D is based on $T_{J_Max} = 150^\circ\text{C}$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Electrical & Thermal Characteristics



PDFN5x6-8L Package Information



10° @ @

θ - - 10°