



## 85V 4.1mΩ N-Ch Power MOSFET

## Features

- Ultra-low  $R_{DS(ON)}$
- Low Gate Charge
- High Current Capability
- 100% UIS Tested, 100%  $R_g$  Tested

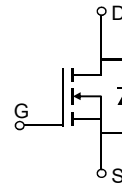
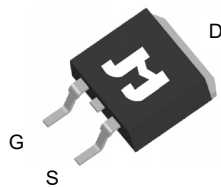
## Product Summary

Parameter	Value	Unit
$V_{DS}$	85	V
$V_{GS(th\_Typ)}$	3.0	V
$I_D$ (@ $V_{GS} = 10V$ ) <sup>(1)</sup>	146	A
$R_{DS(ON\_Typ)}$ (@ $V_{GS} = 10V$ )	4.1	mΩ

## Applications

- Power Management in Telecom., Industrial Automation, CE
- Current Switching in DC/DC & AC/DC Sub-systems
- Motor Driving in Power Tool, E-bike

TO-263-3L Top View

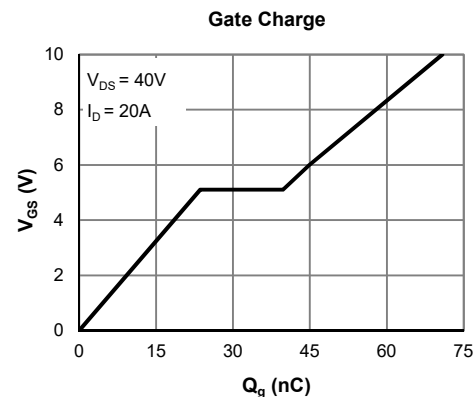
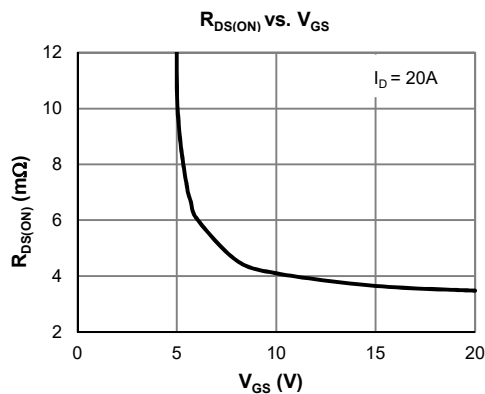


## Ordering Information

Device	Package	# of Pins	Marking	MSL	$T_J$ (°C)	Media	Quantity (pcs)
JMSH0804DE-13	TO-263-3L	3	SH0804D	1	-55 to 150	13-inch Reel	800

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DS}$	85	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>(1)</sup>	$I_D$	$T_C = 25^\circ\text{C}$	146
		$T_C = 100^\circ\text{C}$	92
Pulsed Drain Current <sup>(2)</sup>	$I_{DM}$	453	A
Avalanche Current <sup>(3)</sup>	$I_{AS}$	60	A
Avalanche Energy <sup>(3)</sup>	$E_{AS}$	180	mJ
Power Dissipation <sup>(4)</sup>	$P_D$	$T_C = 25^\circ\text{C}$	179
		$T_C = 100^\circ\text{C}$	71
Junction & Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C



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

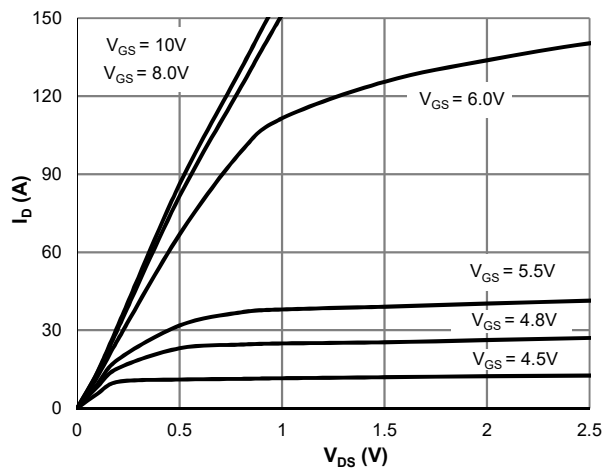
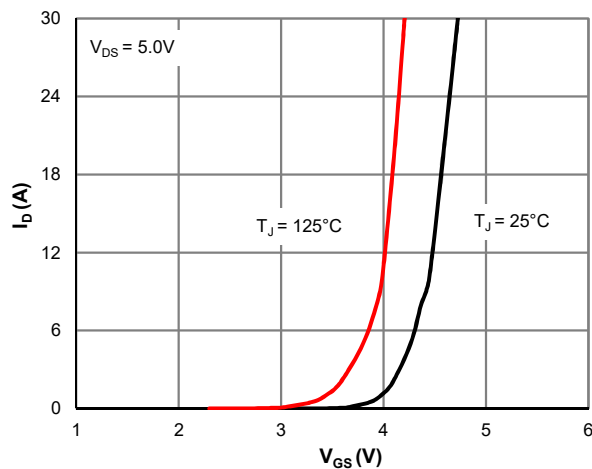
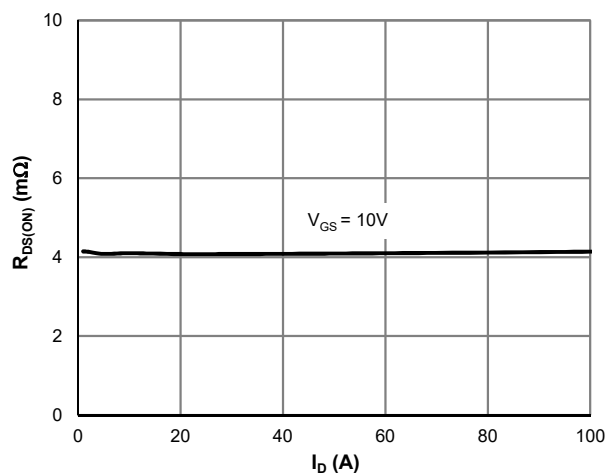
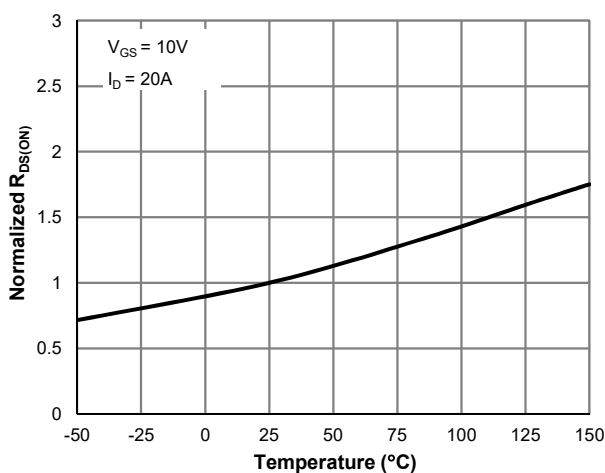
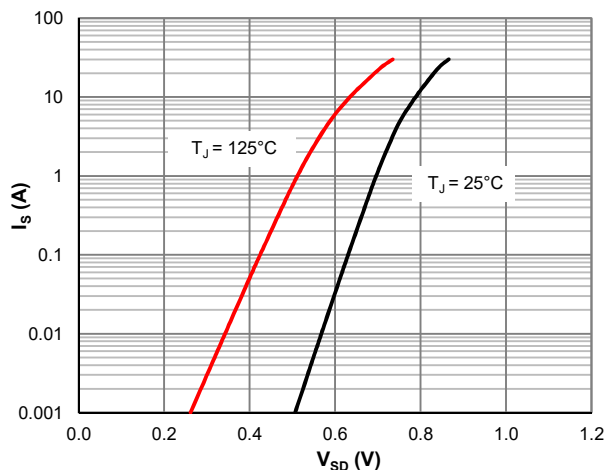
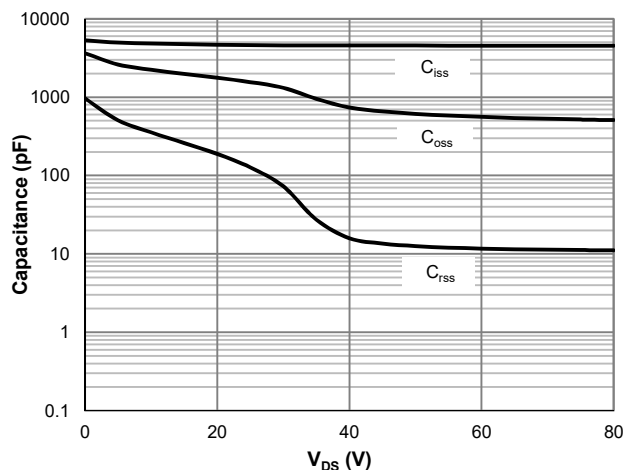
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 250\mu\text{A}$ , $V_{GS} = 0\text{V}$	85			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 68\text{V}$ , $V_{GS} = 0\text{V}$ $T_J = 55^\circ\text{C}$			1.0 5.0	$\mu\text{A}$
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	2.0	3.0	4.0	V
Static Drain-Source ON-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$		4.1	4.8	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 5\text{V}$ , $I_D = 20\text{A}$		69		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1\text{A}$ , $V_{GS} = 0\text{V}$		0.70	1.0	V
Diode Continuous Current	$I_S$	$T_C = 25^\circ\text{C}$			179	A
<b>DYNAMIC PARAMETERS</b> <sup>(5)</sup>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 40\text{V}$ , $f = 1\text{MHz}$		4562		pF
Output Capacitance	$C_{oss}$			738		pF
Reverse Transfer Capacitance	$C_{rss}$			15.9		pF
Gate Resistance	$R_g$	$V_{GS} = 0\text{V}$ , $V_{DS} = 0\text{V}$ , $f = 1\text{MHz}$		1.3		$\Omega$
<b>SWITCHING PARAMETERS</b> <sup>(5)</sup>						
Total Gate Charge (@ $V_{GS} = 10\text{V}$ )	$Q_g$	$V_{GS} = 0$ to $10\text{V}$ $V_{DS} = 40\text{V}$ , $I_D = 20\text{A}$		71		nC
Total Gate Charge (@ $V_{GS} = 6.0\text{V}$ )	$Q_g$			45		nC
Gate Source Charge	$Q_{gs}$			24		nC
Gate Drain Charge	$Q_{gd}$			26.2		nC
Turn-On DelayTime	$t_{D(on)}$	$V_{GS} = 10\text{V}$ , $V_{DS} = 40\text{V}$ $R_L = 2\Omega$ , $R_{GEN} = 6\Omega$		20		ns
Turn-On Rise Time	$t_r$			34		ns
Turn-Off DelayTime	$t_{D(off)}$			48		ns
Turn-Off Fall Time	$t_f$			28		ns
Body Diode Reverse Recovery Time	$t_{rr}$		$I_F = 20\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$		48	
Body Diode Reverse Recovery Charge	$Q_{rr}$	$I_F = 20\text{A}$ , $dI_F/dt = 100\text{A}/\mu\text{s}$		61		nC

**Thermal Performance**

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	55	65	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.55	0.70	$^\circ\text{C}/\text{W}$

**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. This single-pulse measurement was taken under the following condition [ $L = 300\mu\text{H}$ ,  $V_{GS} = 10\text{V}$ ,  $V_{DS} = 50\text{V}$ ] while its value is limited by  $T_{J\_Max} = 150^\circ\text{C}$ .
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.
6. Continuous current rating is limited by the package used.

**Typical Electrical & Thermal Characteristics**

**Figure 1: Saturation Characteristics**

**Figure 2: Transfer Characteristics**

**Figure 3:  $R_{DS(ON)}$  vs. Drain Current**

**Figure 4:  $R_{DS(ON)}$  vs. Junction Temperature**

**Figure 5: Body-Diode Characteristics**

**Figure 6: Capacitance Characteristics**

Typical Electrical & Thermal Characteristics

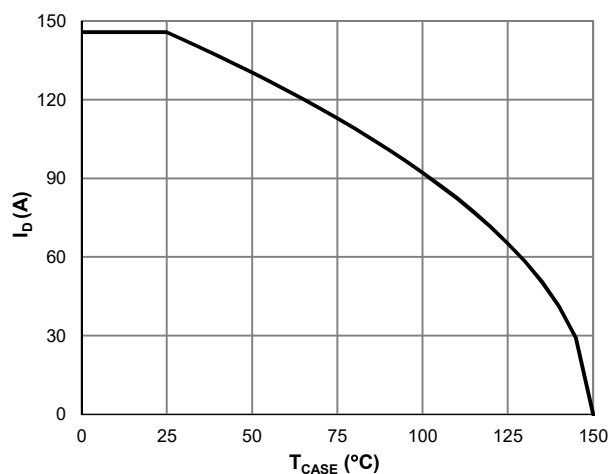


Figure 7: Current De-rating

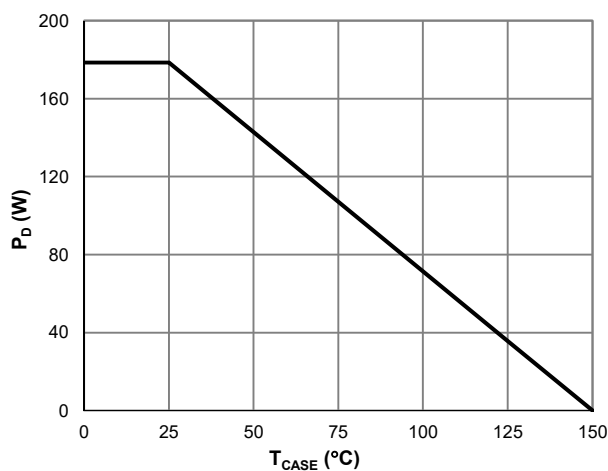


Figure 8: Power De-rating

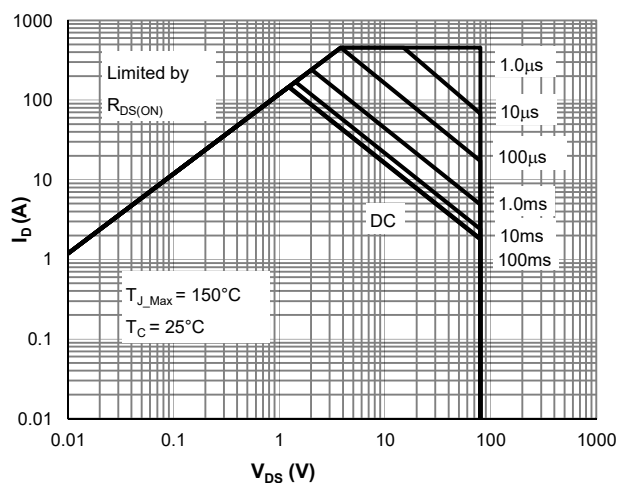


Figure 9: Maximum Safe Operating Area

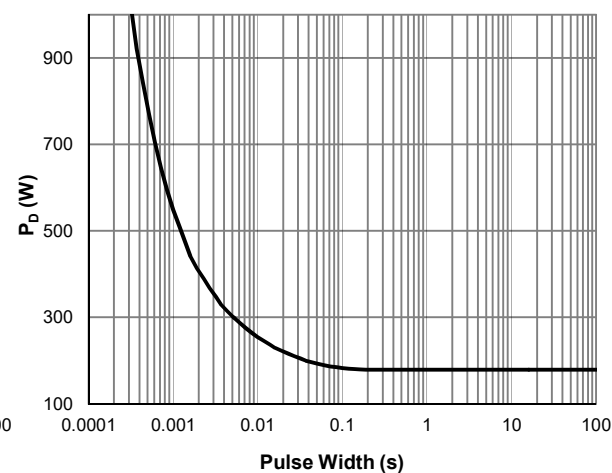


Figure 10: Single Pulse Power Rating, Junction-to-Case

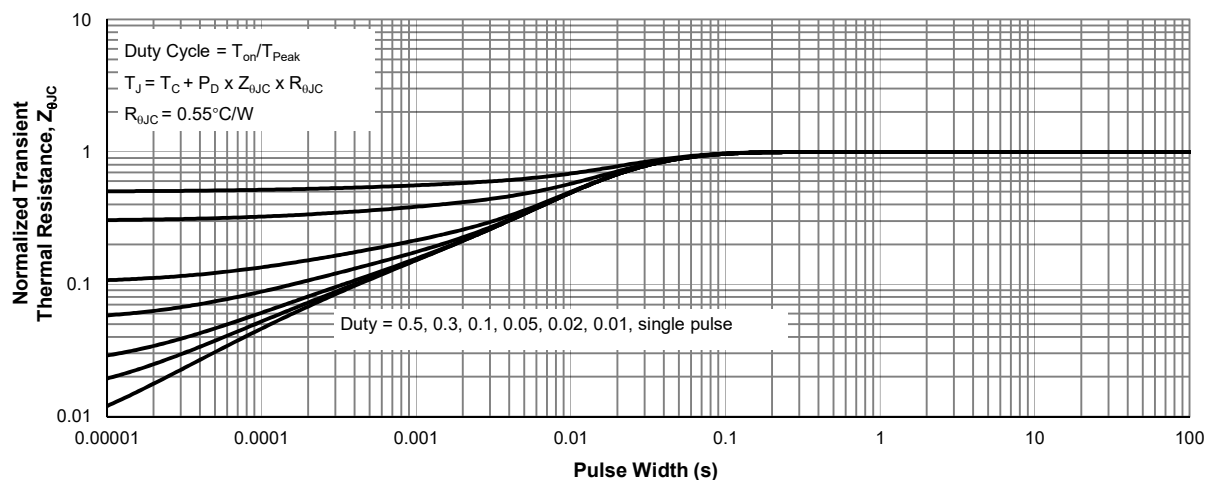
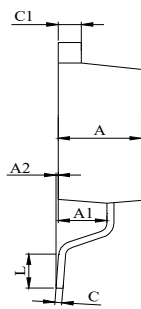
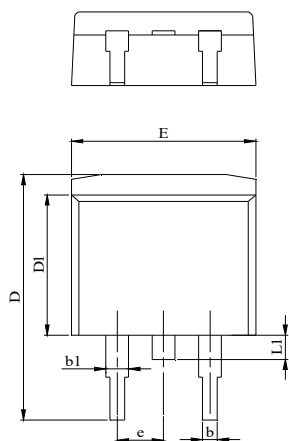
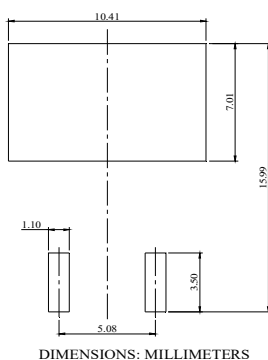


Figure 11: Normalized Maximum Transient Thermal Impedance

**TO-263-3L Package Information**
**Package Outline**


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.24		4.77
A1	2.30		2.89
A2	0.00	0.10	0.25
b	0.70		0.96
b1	1.17		1.70
C	0.30		0.60
C1	1.15		1.42
D	14.10		15.88
D1	8.50		9.60
E	9.78		10.36
L	1.78		2.79
L1			1.75
e		2.54	

**Recommended Footprint**


单击下面可查看定价，库存，交付和生命周期等信息

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