

80V 3.6mΩ N-Ch Power MOSFET

Features

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

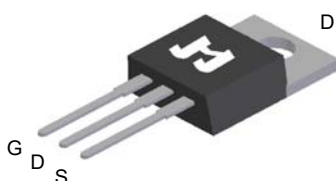
Applications

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

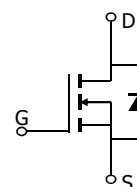
Product Summary

Items	Typ.	Units
V_{DS}	80	V
$V_{GS(th)}$	2.8	V
I_D (at $V_{GS}=10V$)	139	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	3.6	mΩ

TO-220C Top View



TO-263 Top View

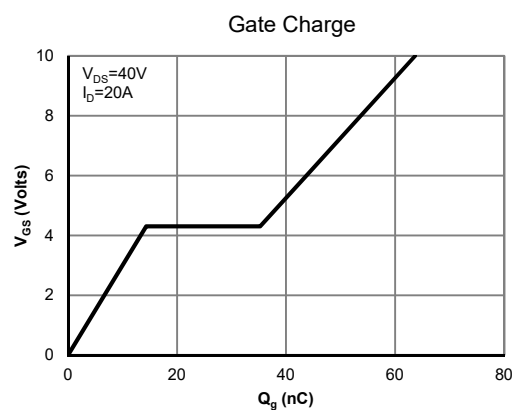
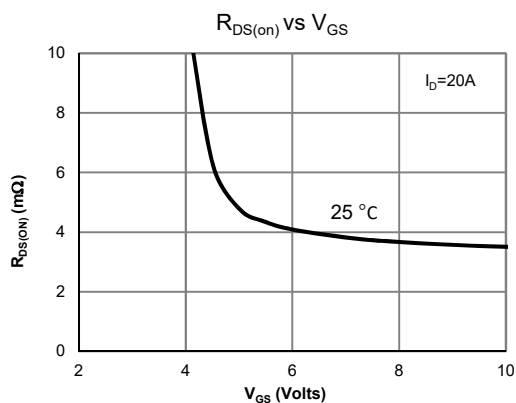


Ordering information

Device	Package	Pins	Marking	MSL	T_J (° C)	Reel Size	Quantity
JMSH0804AC-U	TO-220C	3	SH0804A	N/A	-55~150	Tube	50
JMSH0804AE-13	TO-263	3	SH0804A	MSL3	-55~150	13 inch	800

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

Parameter	Symbol	Value	Units
Drain to source voltage	V_{DS}	80	V
Gate to source voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	139
		$T_C=70^\circ\text{C}$	111
Pulsed Drain Current	I_{DM}	445	A
Avalanche Current	I_{AS}	60	A
Avalanche energy $L=0.1\text{mH}$	E_{AS}	180	mJ
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	156
		$T_C=70^\circ\text{C}$	100
Junction and Storage Temp. Range	T_J, T_{STG}	-55 to 150	° C





Electrical Characteristics (T_J=25° C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	I _D =250μA, V _{GS} =0V	80			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =64V, V _{GS} =0V T _J =55°C			1	μA
					5	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250μA	2	2.8	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		3.6	4.5	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		42		S
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.7	1	V
Maximum Diode Continuous Current	I _S	T _C =25° C			156	A

DYNAMIC PARAMETERS

Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =40V, f=1MHz		3783		pF
Output Capacitance	C _{oss}			1373		pF
Reverse Transfer Capacitance	C _{rss}			22		pF
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		1.2		Ω

SWITCHING PARAMETERS

Total Gate Charge	Q _{g(10V)}	V _{GS} =10V, V _{DS} =40V, I _D =20A		63		nC
Total Gate Charge	Q _{g(6V)}			43		nC
Gate Source Charge	Q _{gs}			14		nC
Gate Drain Charge	Q _{gd}			21		nC
Turn-On DelayTime	t _{D(on)}	V _{GS} =10V, V _{DS} =40V, R _L =2Ω, R _{GEN} =6Ω		14		ns
Turn-On Rise Time	t _r			22		ns
Turn-Off DelayTime	t _{D(off)}			65		ns
Turn-Off Fall Time	t _f			37		ns
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, dI/dt=100A/μs		65		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =20A, dI/dt=100A/μs		147		nC

Thermal performance

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	R _{θJA}	45	55	° C/W
Maximum Junction-to-Case	R _{θJC}	0.65	0.8	° C/W

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

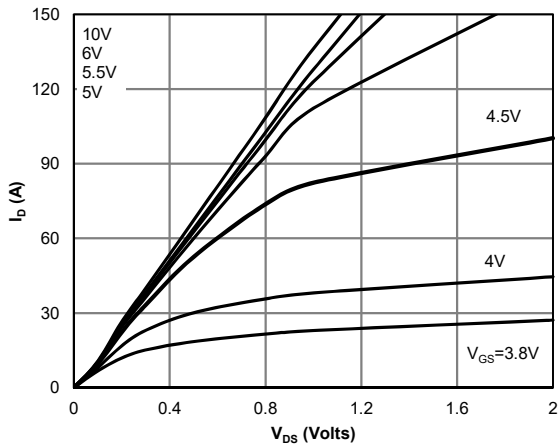


Fig 1: Saturation Characteristics

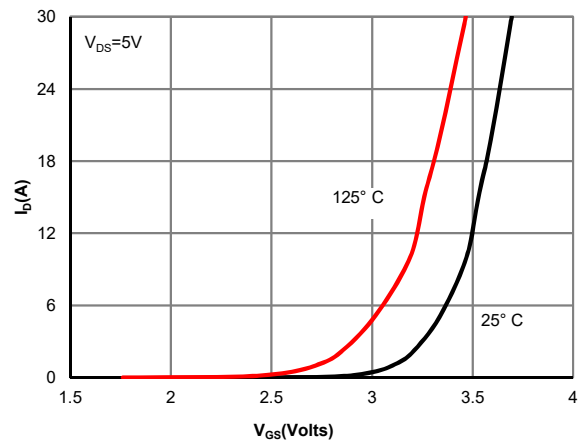


Figure 2: Transfer Characteristics

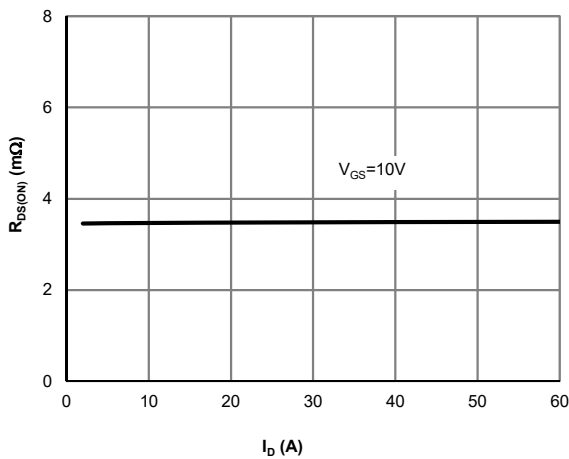


Figure 3: $R_{DS(ON)}$ vs. Drain Current

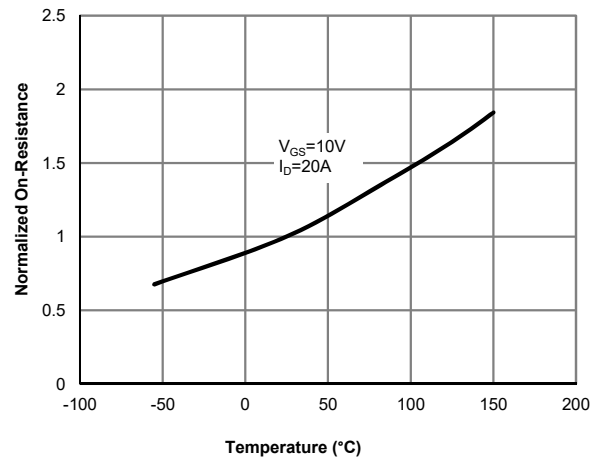


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

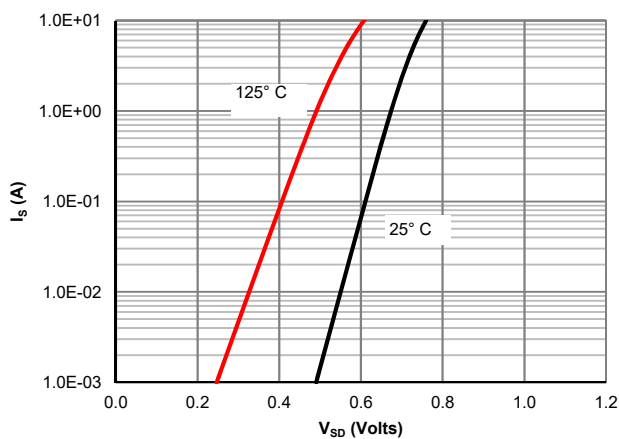


Figure 5: Body-Diode Characteristics

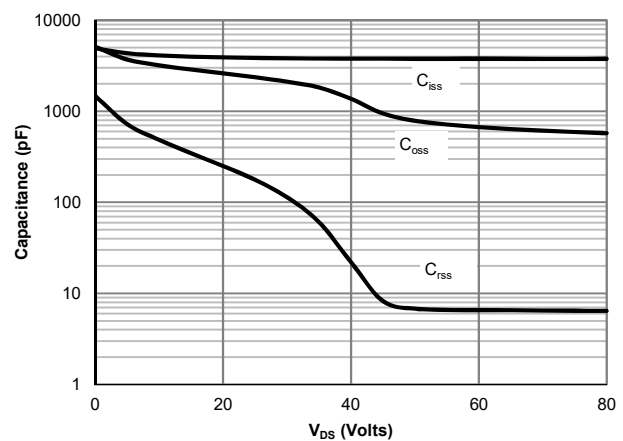


Figure 6: Capacitance Characteristics



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

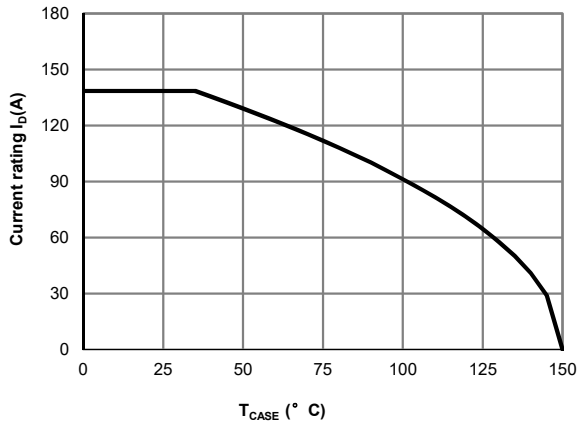


Figure 7: Current De-rating

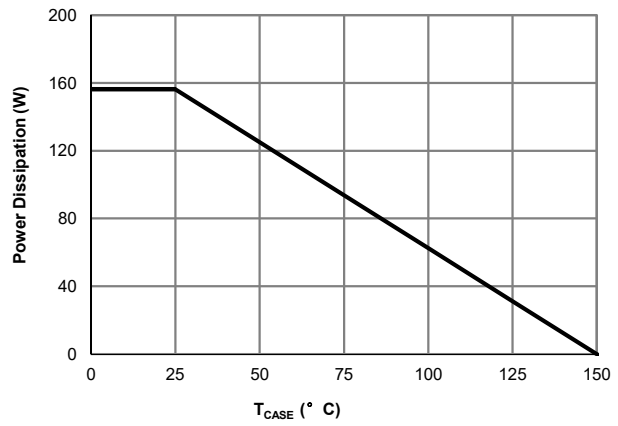


Figure 8: Power De-rating

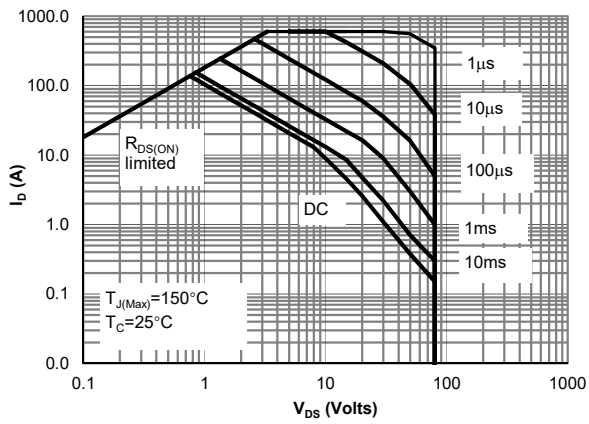


Figure 9: Maximum Safe Operating Area

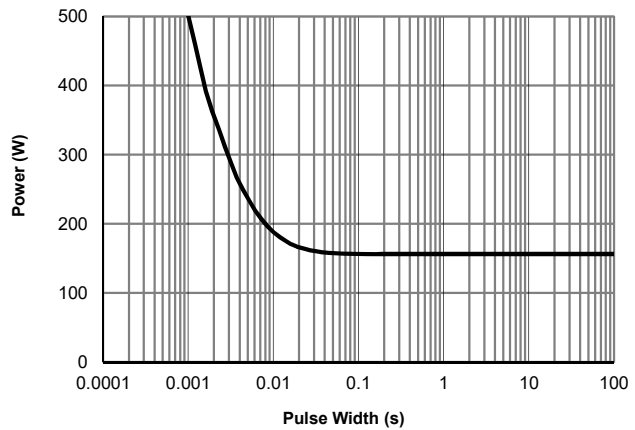


Figure 10: Single Pulse Power Rating Junction-to-Case

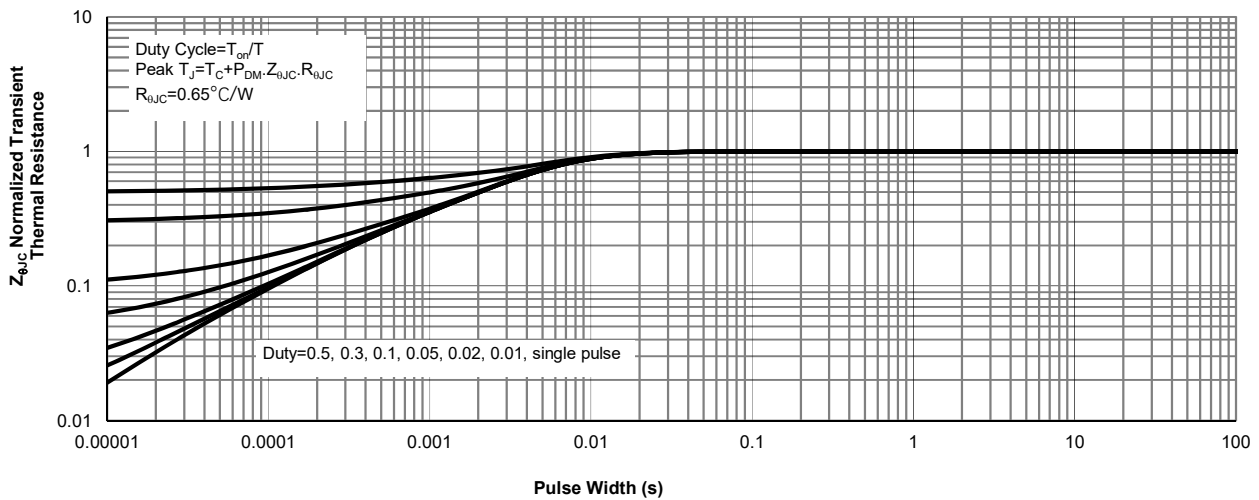
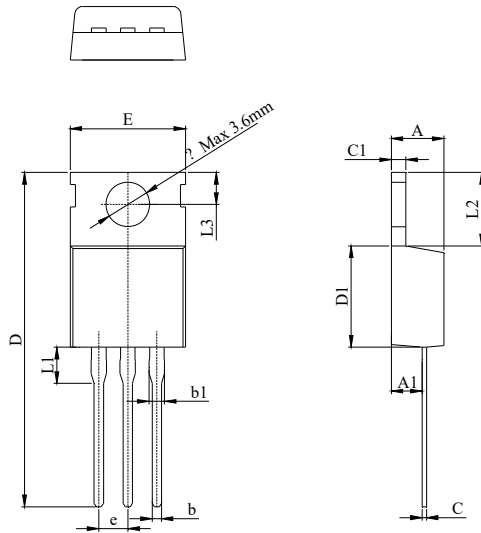


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

TO220-3L Package Outline

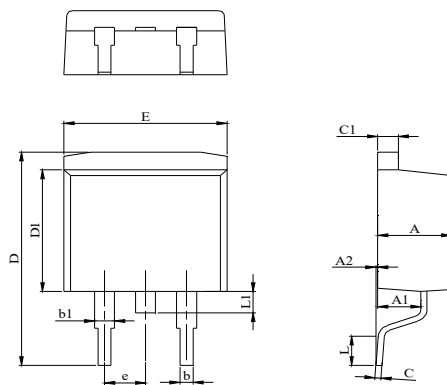
Package Outline



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.37		4.70
A1	2.20		3.00
b	0.70		0.95
b1	1.14		1.70
C	0.45		0.60
C1	1.23		1.40
D	28.00		29.80
D1	8.80		9.90
E	9.70		10.50
L1			3.80
L2	6.25		6.90
L3	2.40		3.00
e		2.54 BSC	

TO263-3L Package Outline

Package Outline



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.37		4.77
A1	2.30		2.89
A2	0.00	0.10	0.25
b	0.70		0.96
b1	1.17		1.47
C	0.30		0.55
C1	1.22		1.42
D	14.10		15.80
D1	8.50		9.60
E	9.86		10.36
L	2.00		2.60
L1			1.75
e		2.54	

Recommend Soldering Footprint

