

80V 2.8mΩ N-Ch Power MOSFET

Features

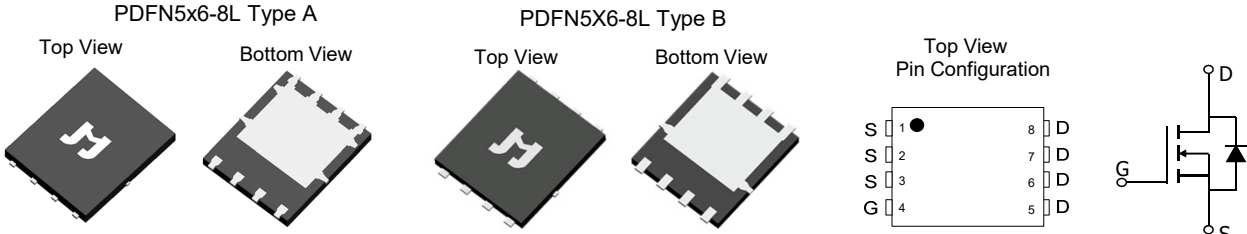
- Ultra Low $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% R_g Tested
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant

Product Summary

Items	Typ.	Units
V_{DS}	80	V
$V_{GS(th)}$	1.8	V
I_D (at $V_{GS}=10V$)	128	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	2.8	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

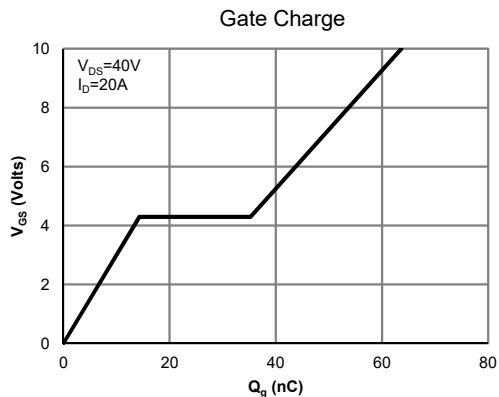
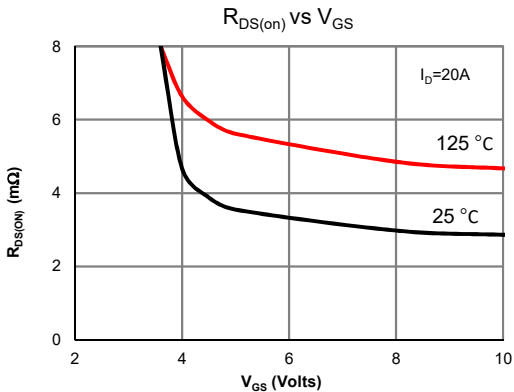


Ordering information

Device	Package	Pins	Marking	MSL	T_J (° C)	Reel Size	Quantity
JMSL0803AG-13	PDFN5x6-8L	8	L0803A	1	-55~150	13 inch	3000

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	$T_C = 25$ (Silicon Limited)	128
		$T_C = 25^\circ\text{C}$ (Package Limited)	100
		$T_C = 100^\circ\text{C}$	81
Pulsed Drain Current	I_{DM}	320	A
Avalanche Current	I_{AS}	60	A
Avalanche energy $L=0.1\text{mH}$	E_{AS}	180	mJ
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	104
		$T_C = 100^\circ\text{C}$	42
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	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		2.8	3.5	mΩ
		V _{GS} =4.5V, I _D =15A		4.2	5.9	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A		78		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			104	A

DYNAMIC PARAMETERS

Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =40V, f=1MHz		3960		pF
Output Capacitance	C _{oss}			1290		pF
Reverse Transfer Capacitance	C _{rss}			9		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(4.5V)}			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		11		ns
Turn-On Rise Time	t _r			18		ns
Turn-Off DelayTime	t _{D(off)}			76		ns
Turn-Off Fall Time	t _f			45		ns
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, dI/dt=100A/μs		61		ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =20A, dI/dt=100A/μs		122		nC

Thermal performance

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	R _{θJA}	50	65	° C/W
Maximum Junction-to-Case	R _{θJC}	0.9	1.2	° C/W

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

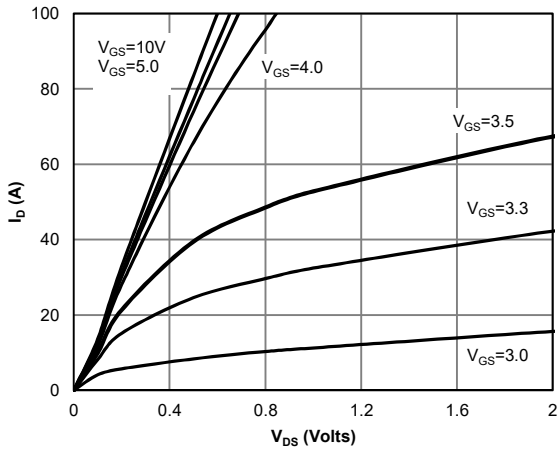


Fig 1: Saturation Characteristics

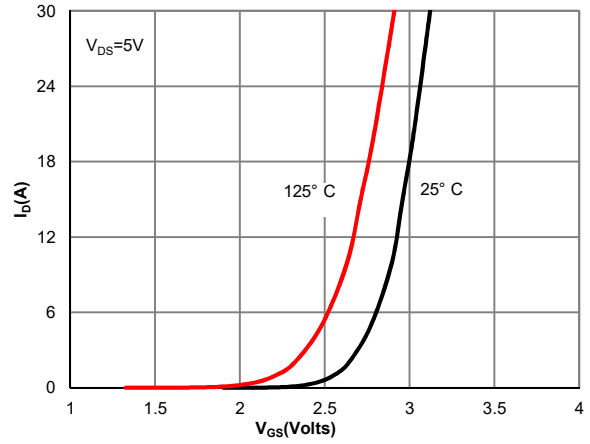


Figure 2: Transfer Characteristics

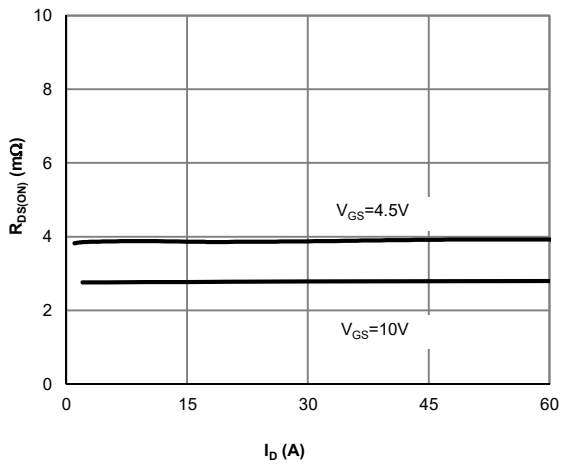


Figure 3: $R_{DS(ON)}$ vs. Drain Current

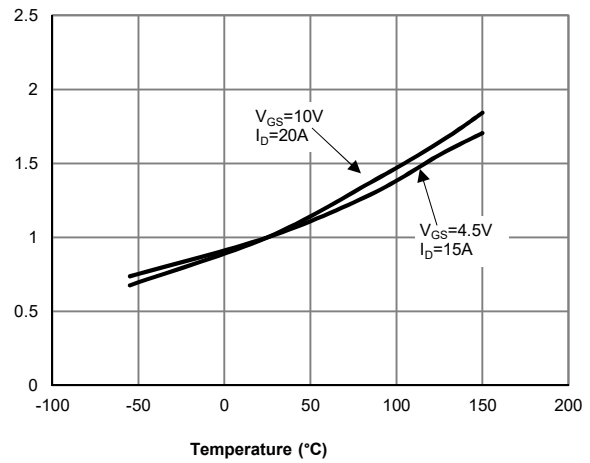


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

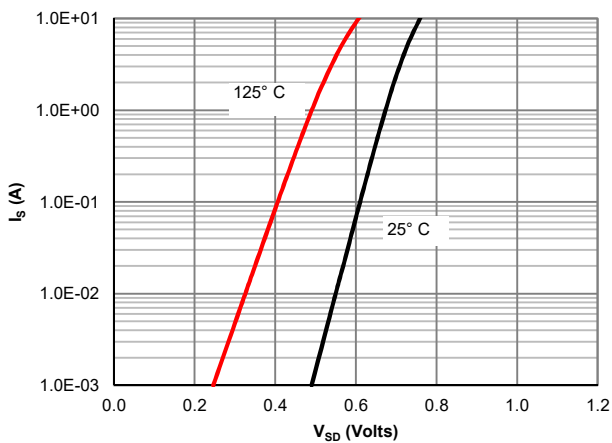


Figure 5: Body-Diode Characteristics

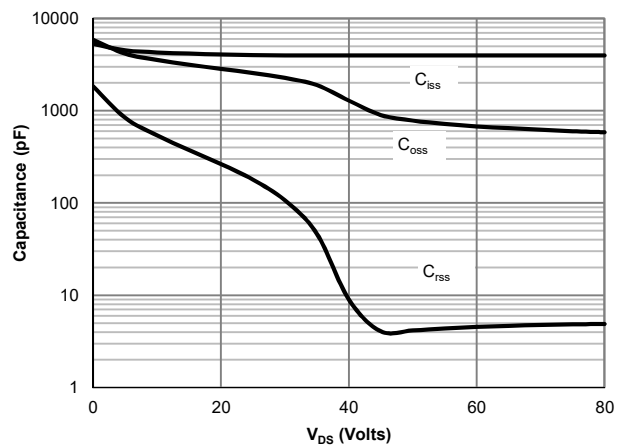


Figure 6: Capacitance Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

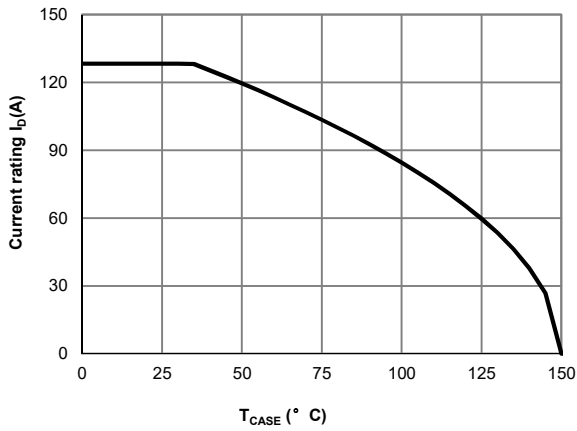


Figure 7: Current De-rating

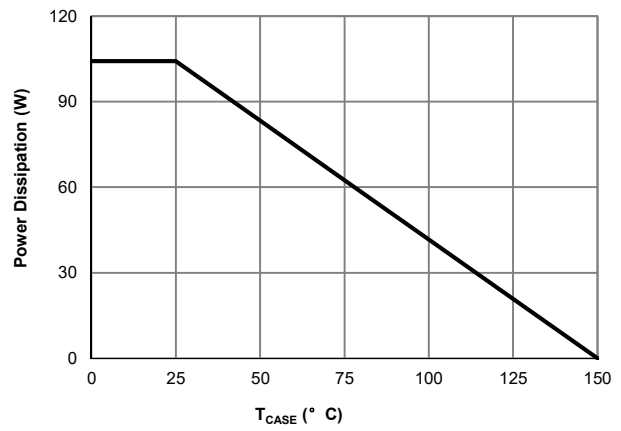


Figure 8: Power De-rating

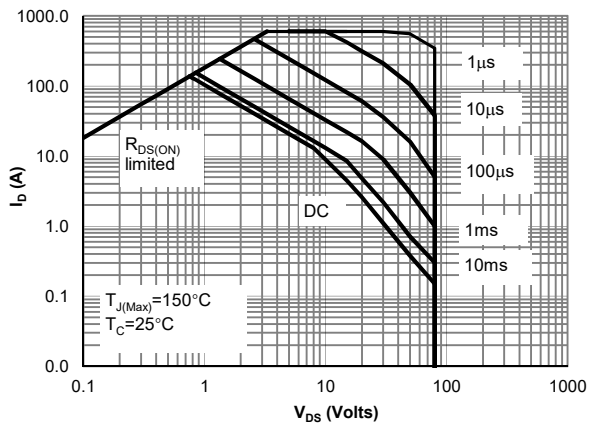


Figure 9: Maximum Safe Operating Area

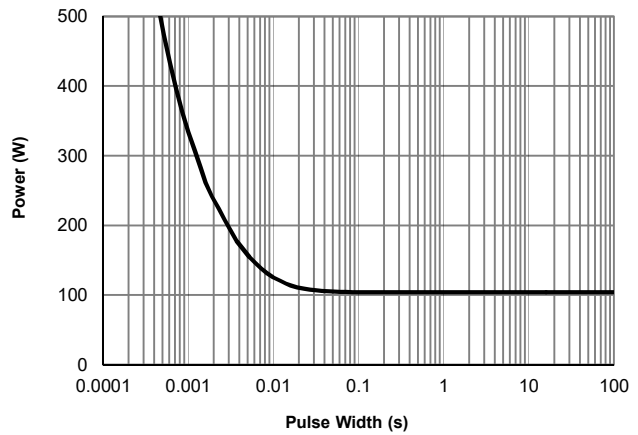


Figure 10: Single Pulse Power Rating Junction-to-Case

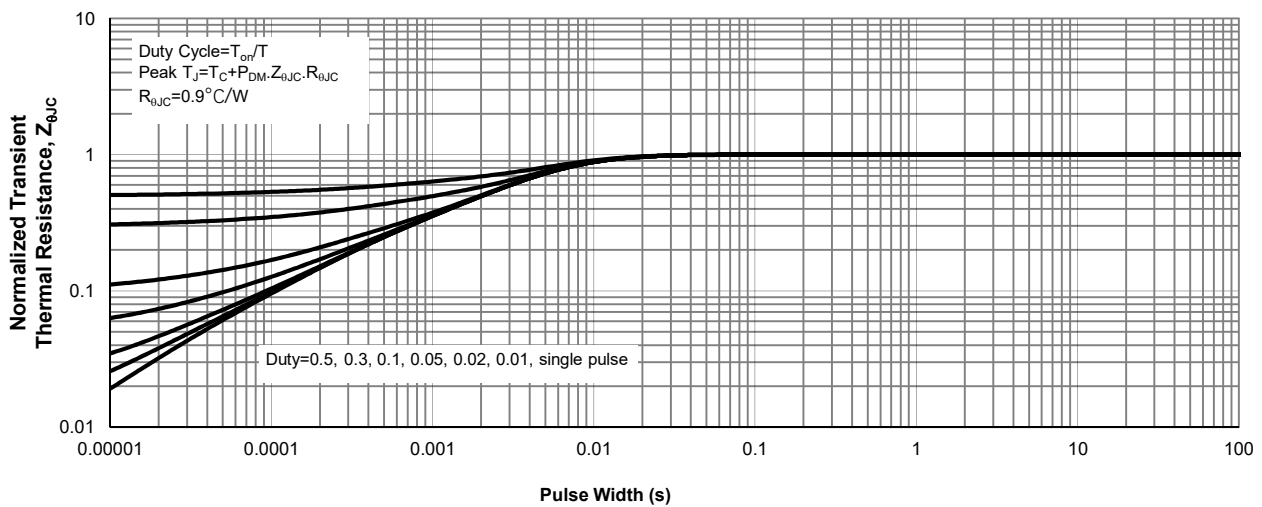
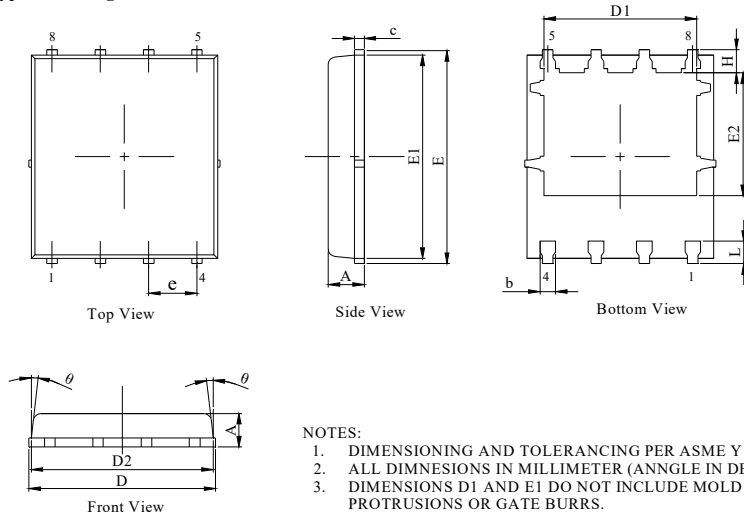


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

PDFN5x6-8L Package Information

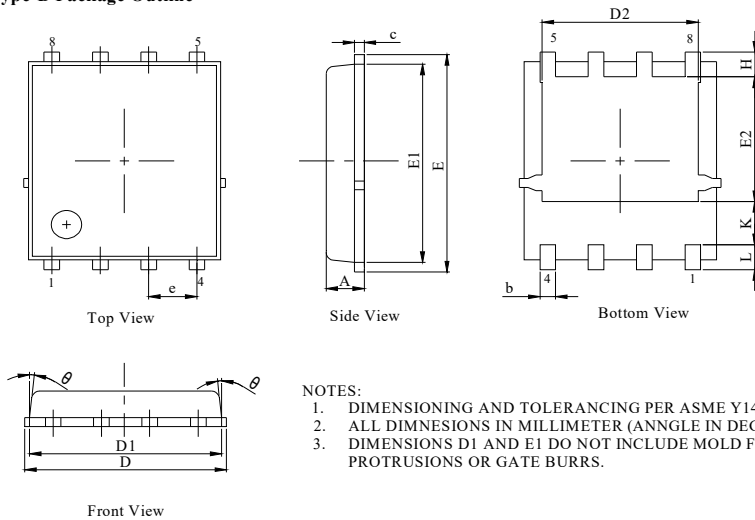
Type-A Package Outline



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
 2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
 3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
b	0.20	0.30	0.40
c	0.21	0.25	0.34
D	4.90	5.00	5.10
D1	3.91	4.01	4.11
D2	4.80	4.90	5.00
E	5.90	6.00	6.10
E1	5.65	5.75	5.85
E2	3.37	3.48	3.58
e	1.27BSC		
H	0.55	0.65	0.75
L	0.55	0.65	0.75
θ	0°	--	12°

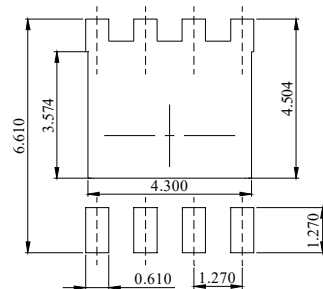
Type-B Package Outline



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
 2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
 3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
b	0.31	0.41	0.51
c	0.20	0.25	0.30
D	5.00	5.20	5.40
D1	4.95	5.05	5.15
D2	4.00	4.10	4.20
E	6.05	6.15	6.25
E1	5.50	5.60	5.70
E2	3.42	3.53	3.63
e	1.27BSC		
H	0.60	0.70	0.80
L	0.50	0.70	0.80
θ	-	-	10°

Recommended Soldering Footprint



DIMENSIONS:MILLIMETERS