

Description

This 30V,150A N-Channel MOSFET in a PDFN5\*6 Plastic Package.

Features

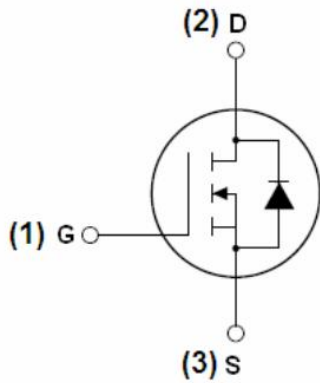
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- Halogen-Free Product

Applications

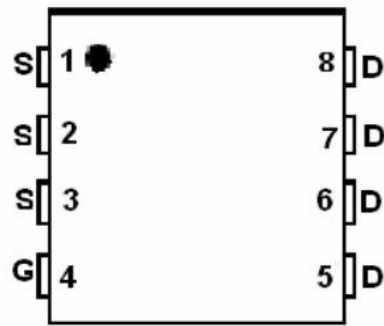
- Battery Management
- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch

$V_{DSS}$	$R_{DS(on)}$ Typ	$I_D$
30V	1.8mΩ	150A

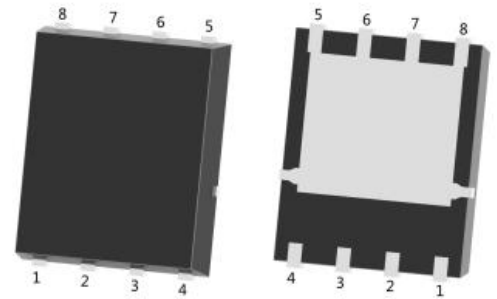
Equivalent Circuit & Pinning



Schematic diagram



Pin assignment



PDFN5X6-8L

**Absolute Maximum Ratings(Ta=25°C)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Drain Current - Continuous	$I_D$	150	A
Drain Current – Pulsed	$I_{DM}$	285	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	78	W
Single Pulse Avalanche Energy(L=0.5mH)	$E_{AS}$	590	mJ
Avalanche Current(L=0.5mH)	$I_{AS}$	33.5	A
Junction and Storage Temperature Range	$T_j, T_{stg}$	-55 to 150	°C
Thermal resistance, junction - ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	°C/W
	Steady-State		
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	1.6

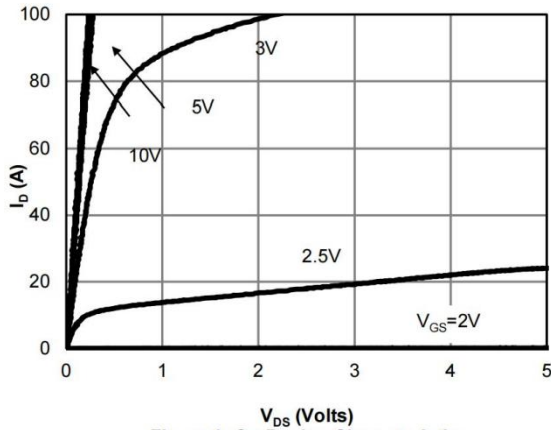
**Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	30	35		V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Body leakage current	$I_{GSS}$	$V_{DS}=0\text{V}, V_{GS}=\pm 20\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0	1.5	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=20\text{A}$		1.8	2.0	m $\Omega$
		$V_{GS}=4.5\text{V}, I_D=10\text{A}$		2.4	3.0	
Diode Forward Voltage	$V_{SD}$	$I_S=1\text{A}, V_{GS}=0\text{V}$			1.2	V
Input Capacitance	$C_{iss}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		5750		pF
Output Capacitance	$C_{oss}$			600		
Reverse Transfer Capacitance	$C_{rss}$			450		
Gate resistance	$R_g$	$V_{GS}=0\text{V}, V_{DS}=0\text{V}, f=1\text{MHz}$		1.5		$\Omega$
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10\text{V}, V_{DS}=15\text{V}, I_D=20\text{A}$		89		nC
Total Gate Charge	$Q_{g(4.5V)}$			40		
Gate Source Charge	$Q_{gs}$			14		
Gate Drain Charge	$Q_{gd}$			13		

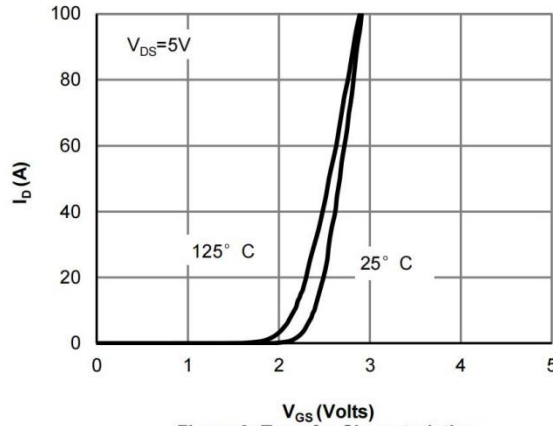
**Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=15V$ $R_L=0.75\ \Omega$ $R_{GEN}=3\ \Omega$		9		ns
Turn-On Rise Time	$t_r$			5		
Turn-Off Delay Time	$t_{d(off)}$			87		
Turn-Off Fall Time	$t_f$			20		

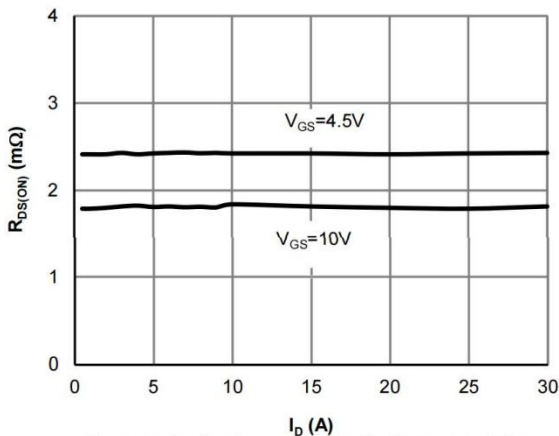
**Electrical Characteristic Curve**



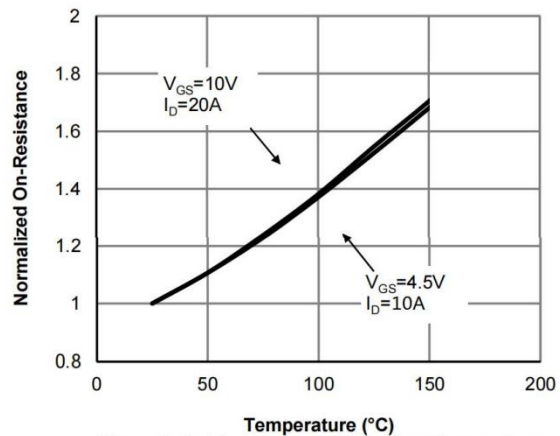
**Figure 1: On-Region Characteristics**



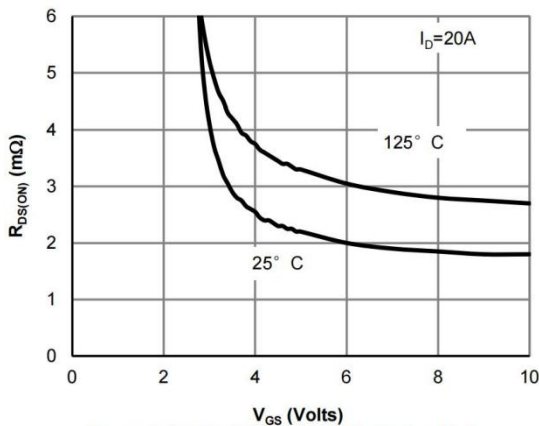
**Figure 2: Transfer Characteristics**



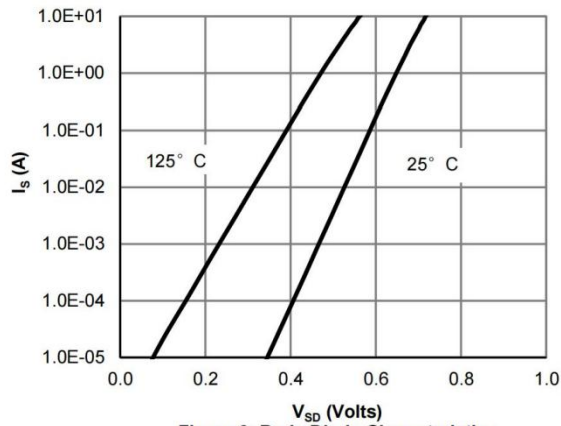
**Figure 3: On-Resistance vs. Drain Current and Gate Voltage**



**Figure 4: On-Resistance vs. Junction Temperature**



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



**Figure 6: Body-Diode Characteristics**

Electrical Characteristic Curve

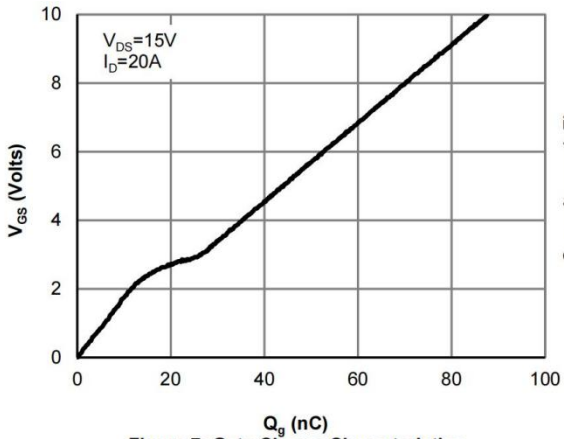


Figure 7: Gate-Charge Characteristics

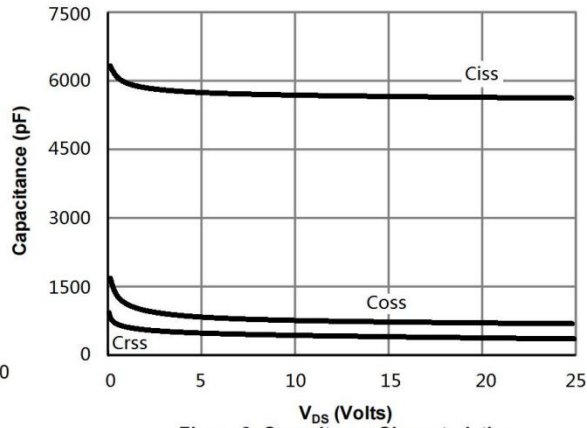


Figure 8: Capacitance Characteristics

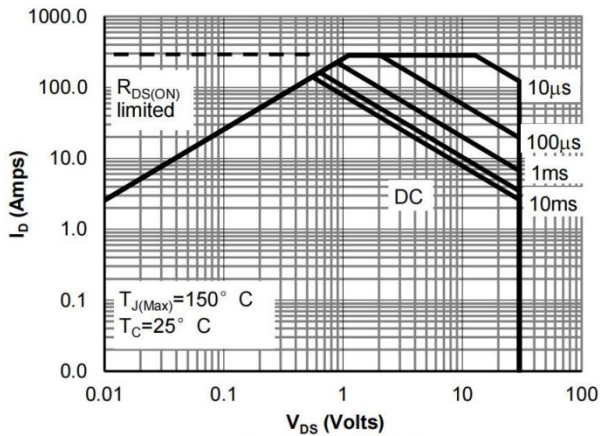


Figure 9: Maximum Forward Biased Safe Operating Area

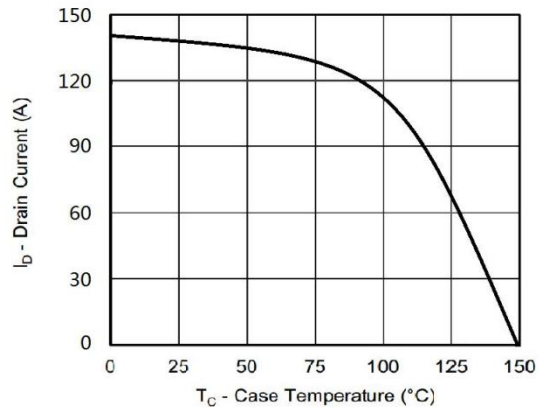


Figure 10: Maximum Continuous Drain Current vs Case Temperature

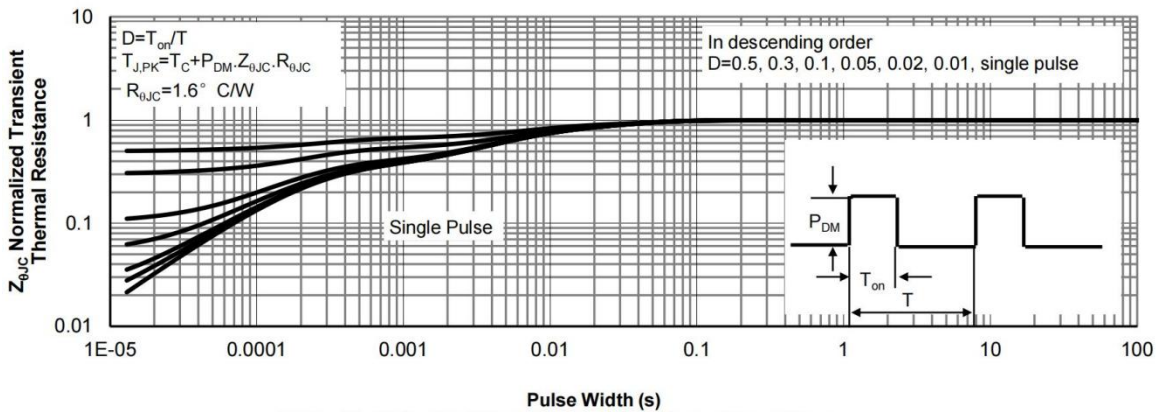
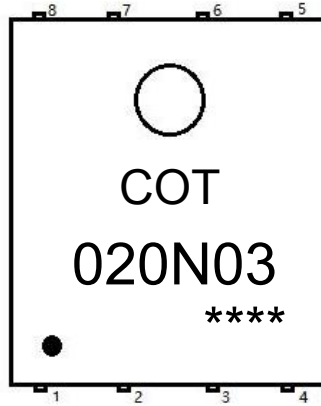


Figure 11: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Logo

020N03: Product Type.

\*\*\*\*: Lot No. Code, code change with Lot No.

Packaging SPEC.

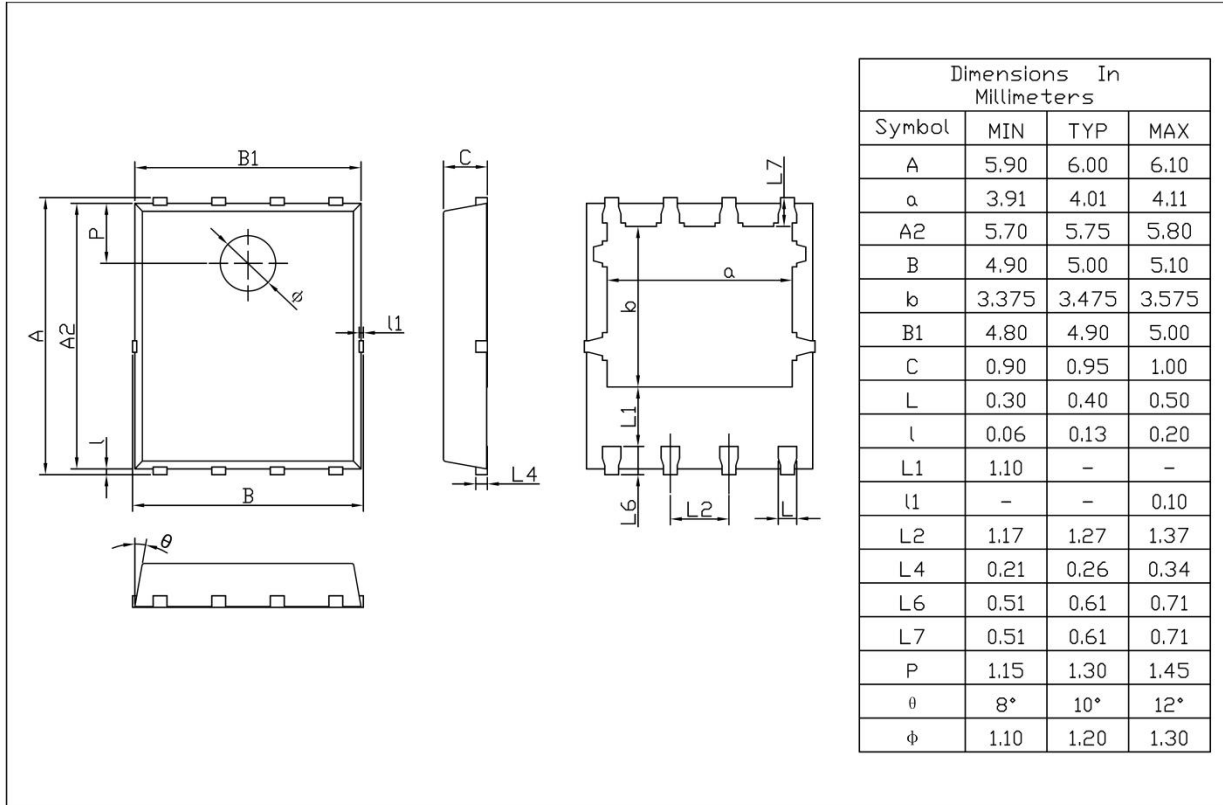
REEL INFORMATION

Package Type	Units					Dimension (unit: mm <sup>3</sup> )		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
PDFN5*6	5000	2	10000	6	60000	13" × 12	360 × 360 × 50	380 × 335 × 366

Package Outline Dimensions

PDFN5 X6

Unit:mm



Rev.01 202209