Descriptions

This 60V 123A N-Channel MOSFET in a PDFN5×6 Plastic Package.

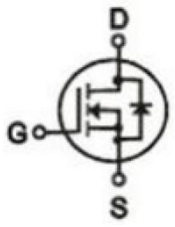
Features

- Low R_{DS}(ON) to minimize conductive loss
- low gate charge for fast switching
- Low thermal resistance
- Halogen-free product.

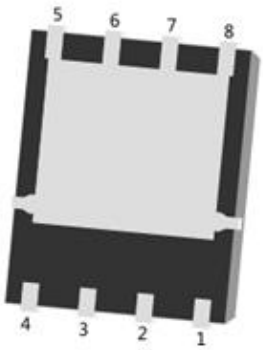
Applications

- Battery management
- High frequency point-of-load synchronous buck conventer for MB/NB/UMPC/VGA
- Networking DC-DC power system
- Load switch

Equivalent Circuit



Pinning



Pin	极性
1	S
2	S
3	S
4	G
5	D
6	D
7	D
8	D

PIN1、2、3： S　　PIN4：G　　PIN5、6、7、8：D

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=30V R_L=1.5Ω R_{GEN}=3Ω		11		ns
Turn-On Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			43		
Turn-Off Fall Time	t_f			2		

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Continuous Drain Current		I_D	123	A
Pulsed Drain Current		I_{DM}	253	A
Gate-Source Voltage		V_{GS}	±20	V
Power Dissipation		$P_D(T_c=25℃)$	83	W
Avalanche energy(L=0.5mH)		E_{AS}	2000	mJ
Avalanche Current(L=0.5mH)		I_{AS}	47	A
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	℃
Maximum Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	20	℃/ W
	Steady-State		50	
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	1.5	

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250uA, V_{GS}=0V	60	77		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1.0	uA
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=250uA	1	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		2.8	3	mΩ
		V_{GS}=4.5V, I_D=20A		3.8	5	
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V		0.64	1	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		3710		pF
Output Capacitance	C_{oss}			2100		
Reverse Transfer Capacitance	C_{rss}			230		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		2.3		Ω
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V, V_{DS}=30V, I_D=20A		51		nC
Total Gate Charge	$Q_{g(4.5V)}$			25		
Gate Source Charge	Q_{gs}			10		
Gate Drain Charge	Q_{gd}			8.5		

Electrical Characteristic Curve

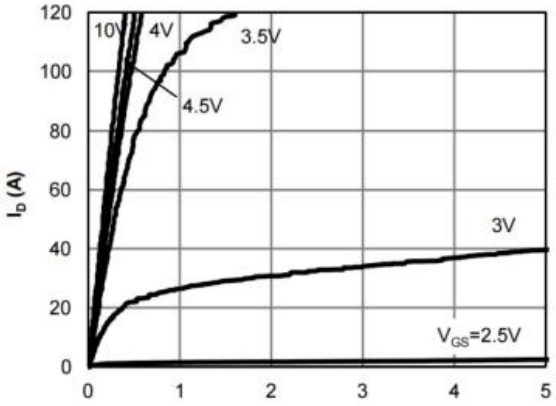


Figure 1: On-Region Characteristics

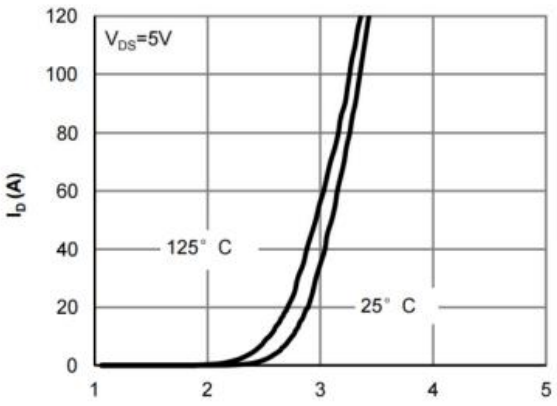


Figure 2: Transfer Characteristics

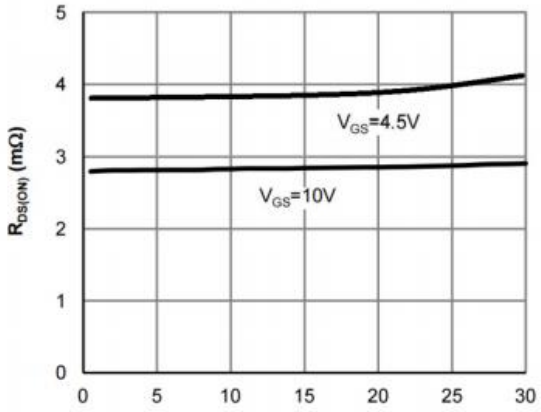


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

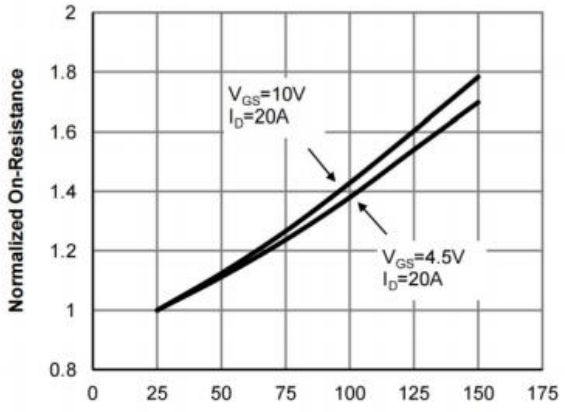


Figure 4: On-Resistance vs. Junction Temperature

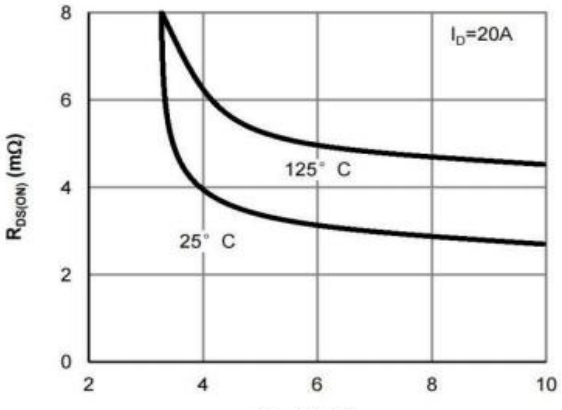


Figure 5: On-Resistance vs. Gate-Source Voltage

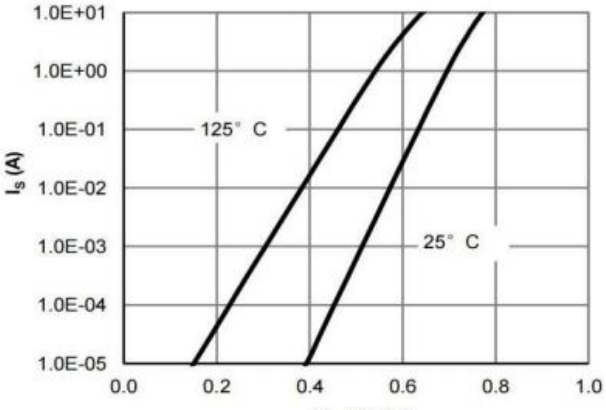


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

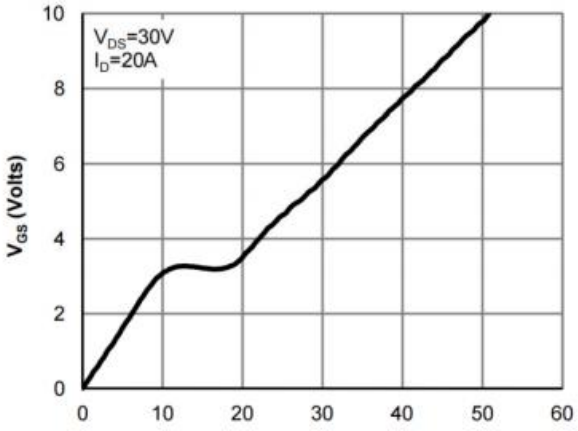


Figure 7: Gate-Charge Characteristics

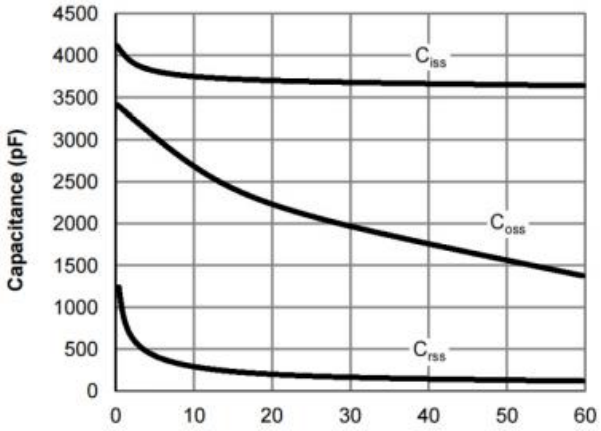


Figure 8: Capacitance Characteristics

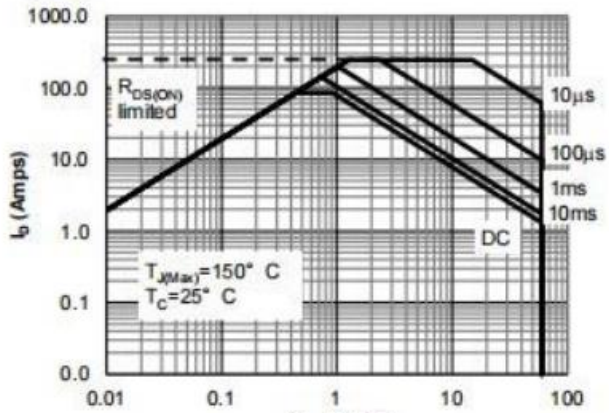


Figure 9: Maximum Forward Biased Safe Operating Area

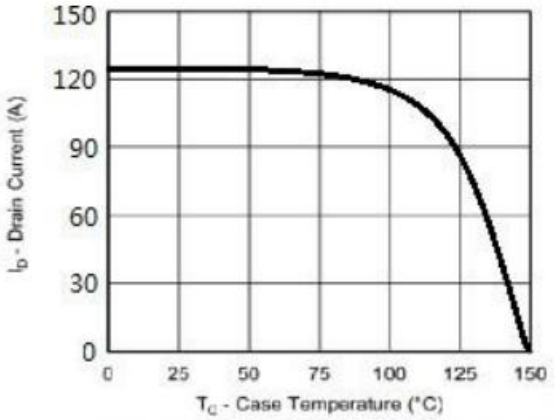


Figure10. Maximum Continuous Drain Current vs Case Temperature

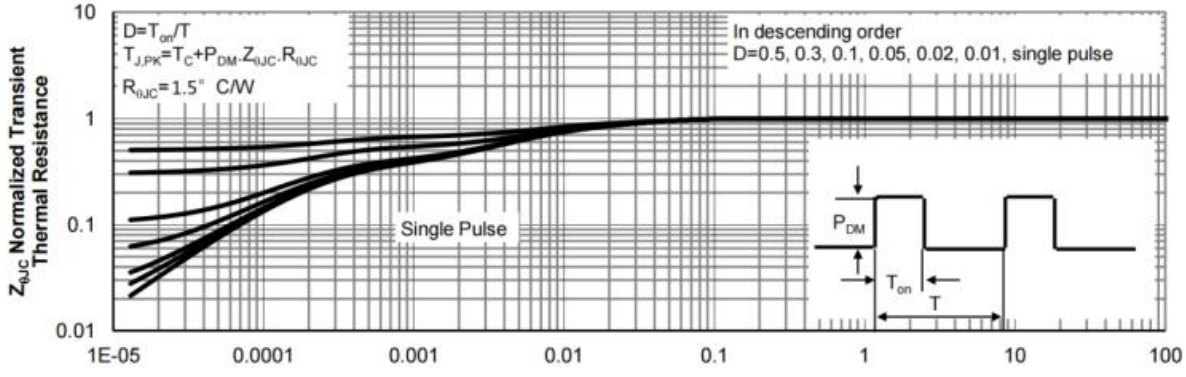
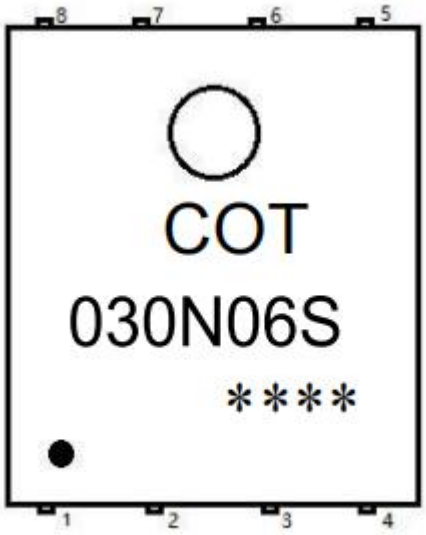


Figure 11: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Code.

030N06S: Product Type Code.

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

Packaging SPEC

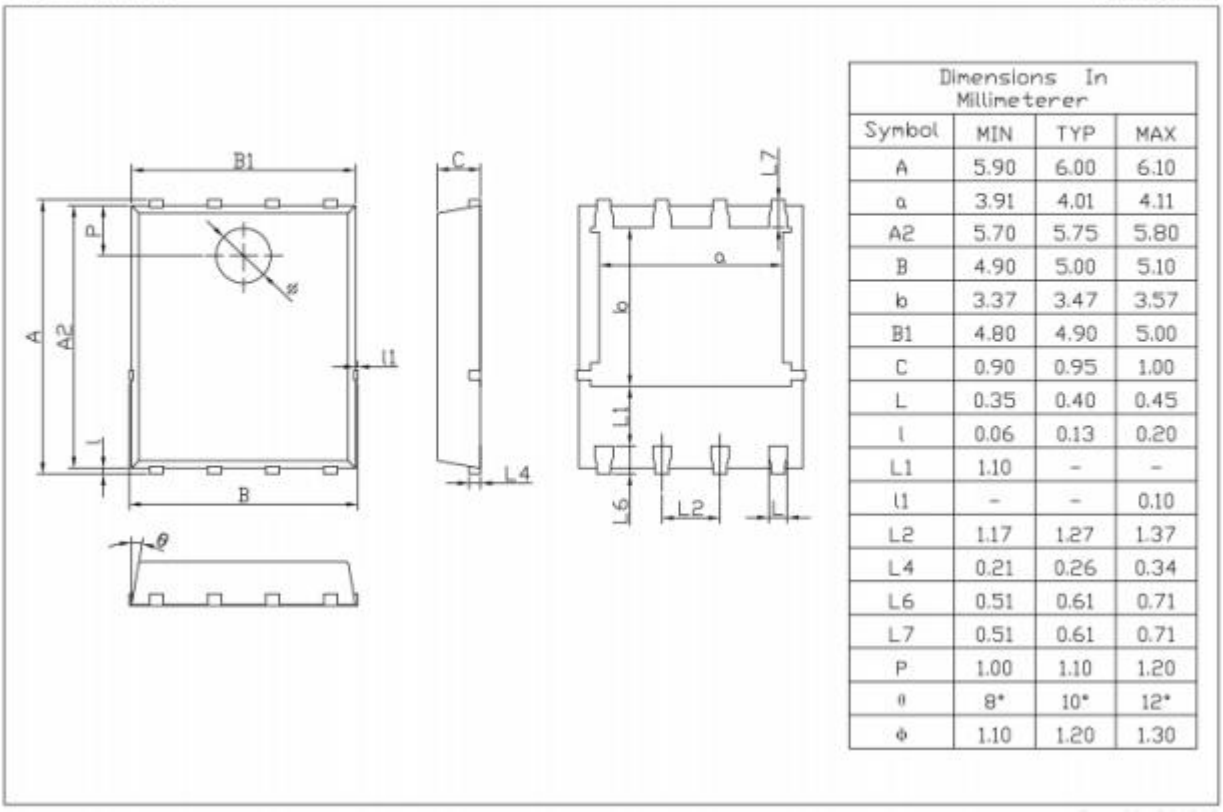
REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	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

PDFN5×6 外形尺寸图

PDFN5×6 Unit:mm



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	5.70	5.75	5.80
B	4.90	5.00	5.10
b	3.37	3.47	3.57
B1	4.80	4.90	5.00
C	0.90	0.95	1.00
L	0.35	0.40	0.45
l	0.06	0.13	0.20
L1	1.10	-	-
l1	-	-	0.10
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.00	1.10	1.20
θ	8°	10°	12°
φ	1.10	1.20	1.30