



MT30NC4A

主要参数 MAIN CHARACTERISTICS

I_D	130A
V_{DSS}	30V
$R_{dson-max}$ (@ $V_{gs}=10V$)	3.1m Ω
Q_g-typ	98nC

用途

- 电信与工业领域隔离 DC/DC 转换
- 同步整流领域 DC/DC 与 AC/DC 转换

产品特性

- 低栅极电荷
- 低 R_{dson}
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

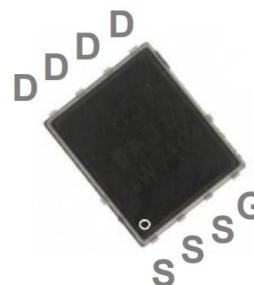
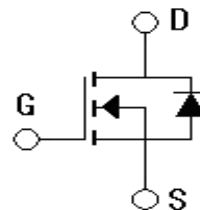
APPLICATIONS

- Isolated DC/DC Converters in Telecom and Industrial
- Synchronous Rectification in DC/DC and AC/DC Converters

FEATURES

- Low gate charge
- Low R_{dson}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

封装 Package



订货信息 ORDER MESSAGE

订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
N/A	N/A	N/A	MT30NC4A-AA-AR	MT30NC4A	PDFN5×6





绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MT30NC4A	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	30	V
连续漏极电流 Drain Current -continuous	I_D T=25℃	130*	A
	I_D T=100℃	76*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	520*	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	±20	V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2)	E_{AS}	135	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	30	A
耗散功率 Power Dissipation	P_D Tc=25℃ -Derate above 25℃	121	W
		0.95	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55~+175	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	℃

*漏极电流由最高结温限制

*Drain current limited by maximum junction temperature





电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单 位 Units
关态特性 Off –Characteristics						
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	30	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=30V, V_{GS}=0V,$ $T_C=125^\circ C$	-	-	100	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V, V_{GS}=20V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V, V_{GS}=-20V$	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	1.0	1.7	2.4	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	2.4	3.1	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	3.2	4.2	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=20A$ (note 4)	20.8	-	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=15V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	5471	-	pF
输出电容 Output capacitance	C_{oss}		-	1628	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	1026	-	pF



**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=15V, I_D=50A, R_G=3.0\Omega$ (note 3, 4)	-	17	-	ns
上升时间 Turn-On rise time	t_r		-	41	-	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	55	-	ns
下降时间 Turn-Off Fall time	t_f		-	66	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=15V,$ $I_D=50A$ $V_{GS}=10V$ (note 3, 4)	-	98	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	11	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	21	-	nC
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings						
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I_S	$T_C=25^\circ\text{C}$	-	-	130	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ\text{C}$	-	-	520	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ\text{C}, V_{GS}=0V,$ $I_S=30A$	-	-	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	$I_S=30A$ $dI_F/dt=100A/\mu s$ (note 3)	-	27	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	25	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MT30NC4A	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.24	$^\circ\text{C}/\text{W}$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	60	$^\circ\text{C}/\text{W}$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=30A, V_{DD}=30V, R_G=25\Omega, L=0.3mH$ 起始结温
 $T_J=25^\circ\text{C}$
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 1\%$
- 4: 基本与工作温度无关

Notes:

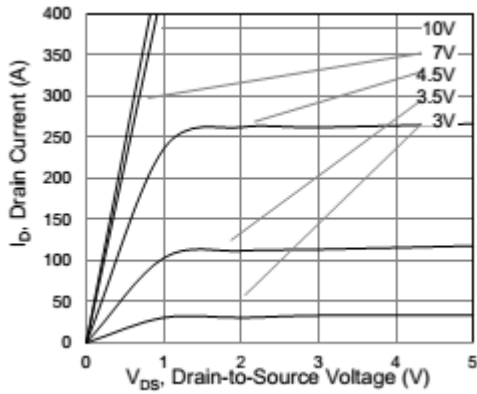
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=30A, V_{DD}=30V, R_G=25\Omega, L=0.3mH$ Starting
 $T_J=25^\circ\text{C}$
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$
- 4: Essentially independent of operating temperature



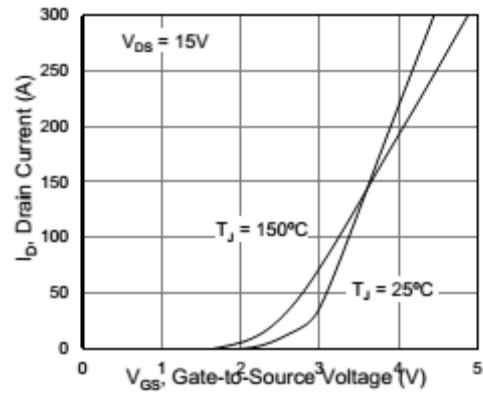


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

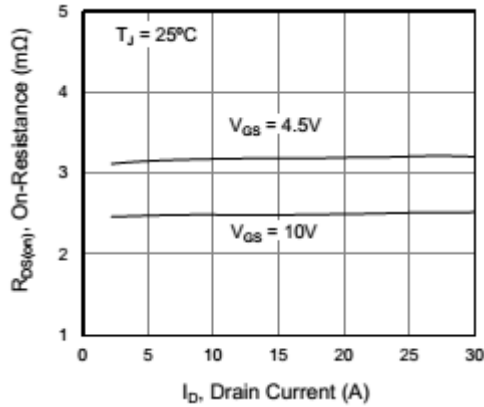
On-Region Characteristics



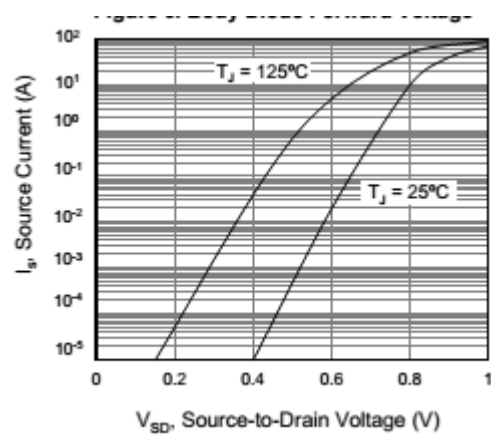
Transfer Characteristics



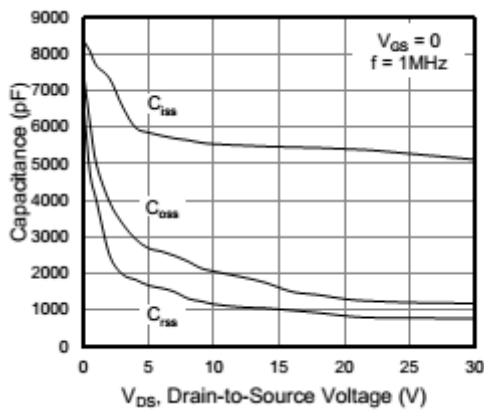
On-Resistance Variation vs. Drain Current



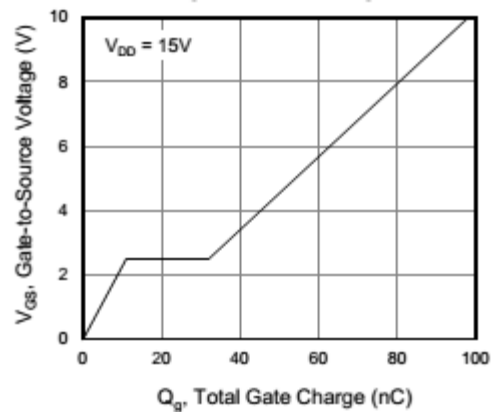
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



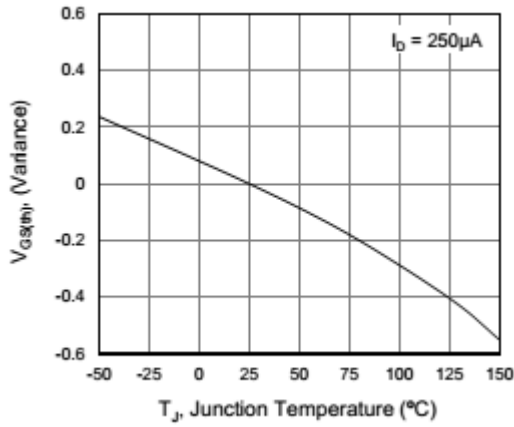
Gate Charge Characteristics



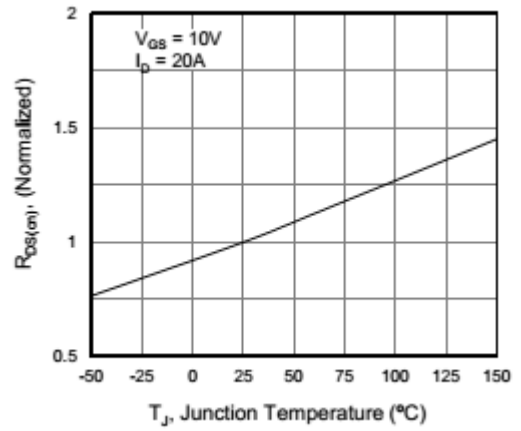


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

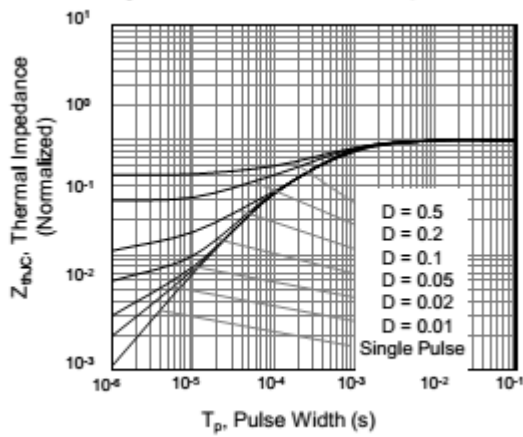
Threshold Voltage Variation vs. Temperature



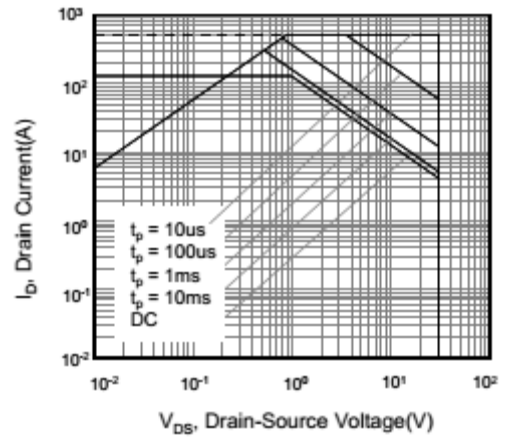
On-Resistance Variation vs. Temperature



Transient Thermal Response Curve For MT30NC4A



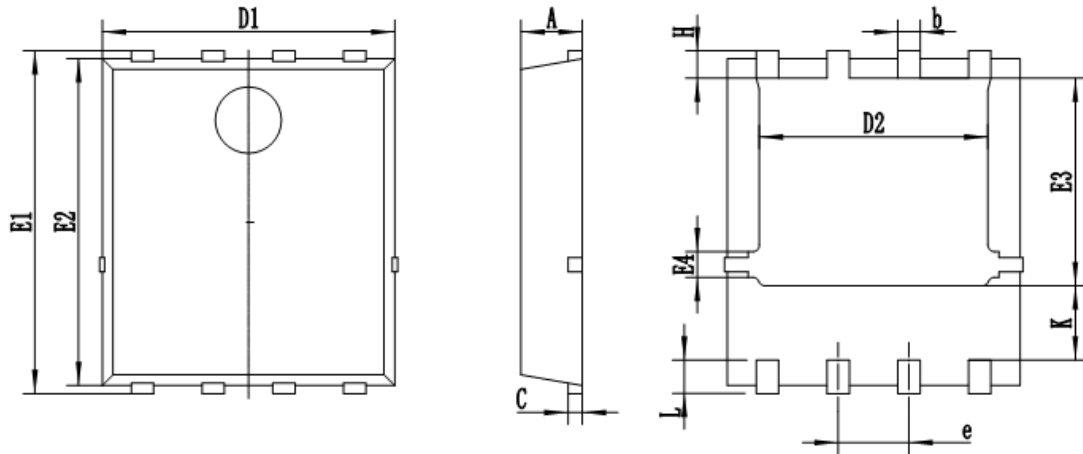
Safe operation area



外形尺寸 PACKAGE MECHANICAL DATA

PDFN5×6

单位 Unit: mm



SYMBOL	mm	
	MIN	MAX
A	0.95	1.25
C	0.1	0.4
b	0.25	0.55
D1	4.9	5.5
D2	3.75	4.3
e	1.27 BSC	
E1	5.9	6.4
E2	5.6	6.1
E3	3.47	3.97
E4	0.31	0.61
L	0.25	0.75
H	0.35	0.65
K	1.13	1.53

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