



MT30N3A

主要参数 MAIN CHARACTERISTICS

I_D	161A
V_{DSS}	30V
$R_{dson-max}$ (@ $V_{gs}=10V$)	3.4m Ω
Q_g-typ	89nC

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

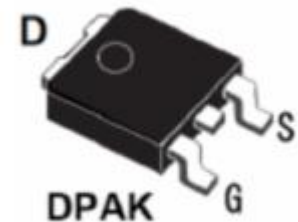
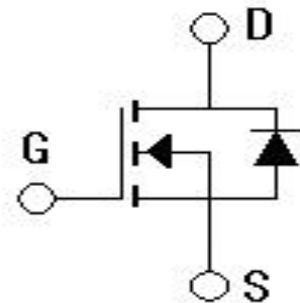
APPLICATIONS

- 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		
MT30N3A-R-B	MT30N3A-R-BR	MT30N3A-R-A	MT30N3A-R-AR	MT30N3A	DPAK





绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MT30N3A	
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℃	161*	A
	I _D T=100℃	128*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I _{DM}	515*	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 T _C =25℃ -Derate above 25℃	178	W
		1.42	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150	℃
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	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=20A$	-	2.6	3.4	m Ω
		$V_{GS} = 4.5V, I_D=20A$	-	3.6	4.7	m Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D=20A$ (note 4)	-	30.2	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1.0MHz$	-	1.17	-	Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	5782	-	μF
输出电容 Output capacitance	C_{oss}		-	465	-	μF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	376	-	μF



**电特性 ELECTRICAL CHARACTERISTICS**

开关特性 Switching Characteristics					
延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=20V, I_D=10A, R_G=3.0\Omega$ (note 3, 4)	-	12	- ns
上升时间 Turn-On rise time	t_r		-	11	- ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	40	- ns
下降时间 Turn-Off Fall time	t_f		-	12	- ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=15V$, $I_D=30A$ $V_{GS}=10V$ (note 3, 4)	-	89	- nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	9	- nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	16	- 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	$T_C=25^\circ C$	-	-	120 A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}	$T_C=25^\circ C$	-	-	480 A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, V_{GS}=0V, I_{SD}=30A$	-	-	1.2 V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=30A, T_J=25^\circ C$ $dI_F/dt=100A/\mu s$ (note 3)	-	60	- ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	120	- nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		MT30N3A	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.0	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	90	$^\circ C/W$

注释:

- 1: 脉冲宽度由最高结温限制
- 2: $I_{AS}=30A, V_{DD}=50V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, 起始结温 $T_J=25^\circ C$
- 3: 脉冲测试: 脉冲宽度 $\leq 300\mu s$, 占空比 $\leq 2\%$
- 4: 基本与工作温度无关

Notes:

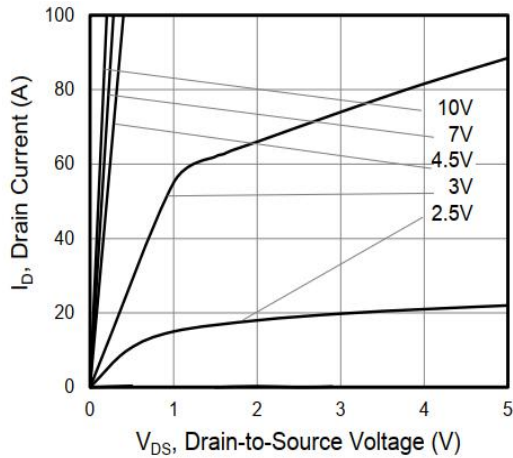
- 1: Pulse width limited by maximum junction temperature
- 2: $I_{AS}=30A, V_{DD}=50V, V_{GS}=10V, L=0.1mH, R_G=25\Omega$, Starting $T_J=25^\circ C$
- 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$
- 4: Essentially independent of operating temperature



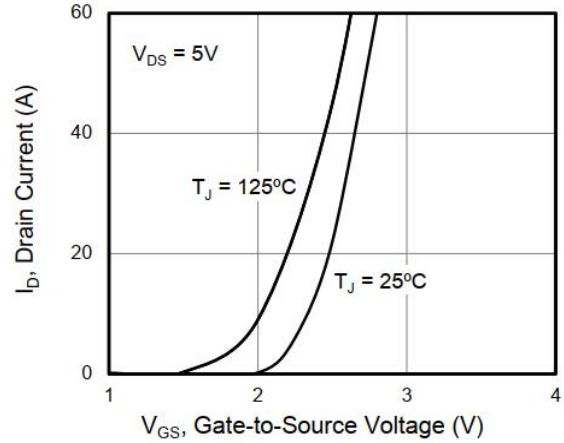


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

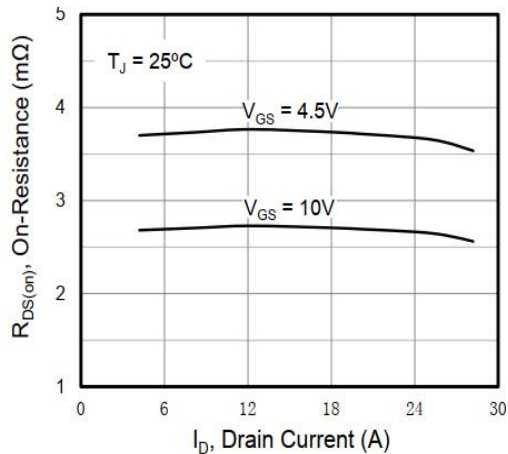
On-Region Characteristics



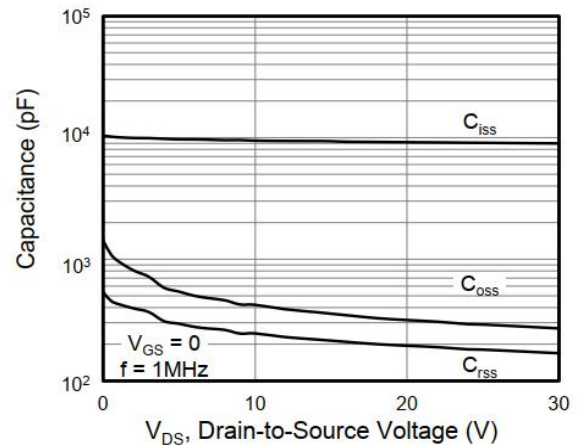
Transfer Characteristics



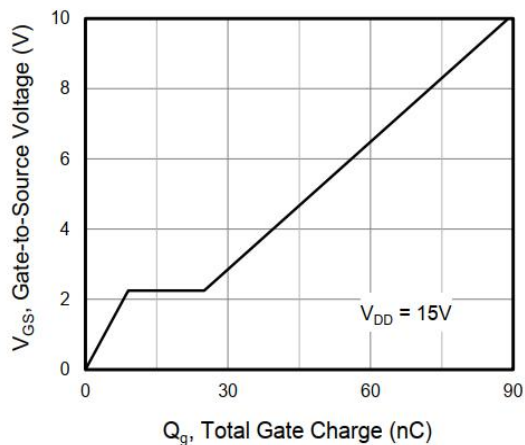
On-Resistance Variation vs. Drain Current and Gate Voltage



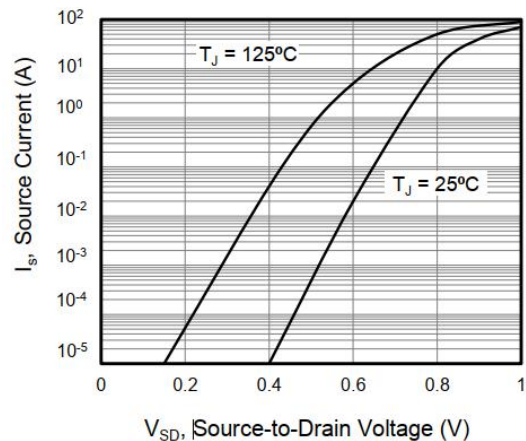
Capacitance Characteristics



Gate Charge Characteristics

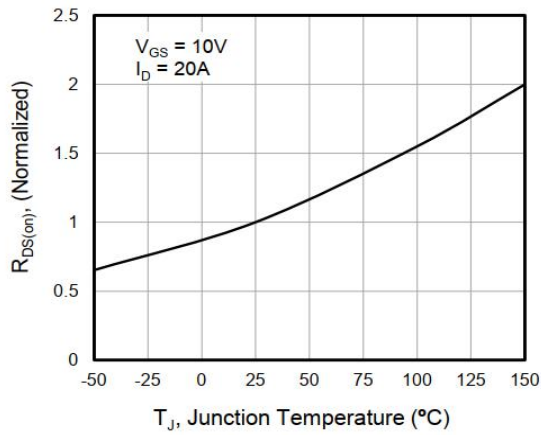


Body Diode Forward Voltage Variation vs. Source Current and Temperature

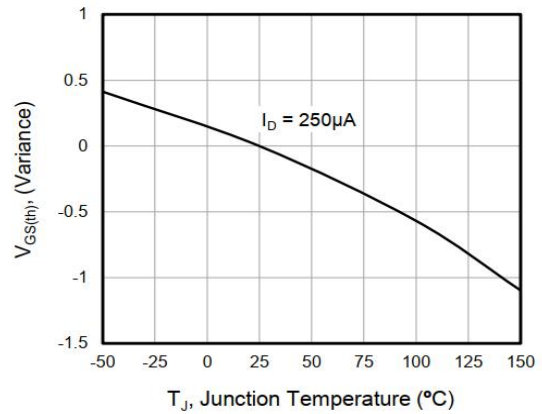




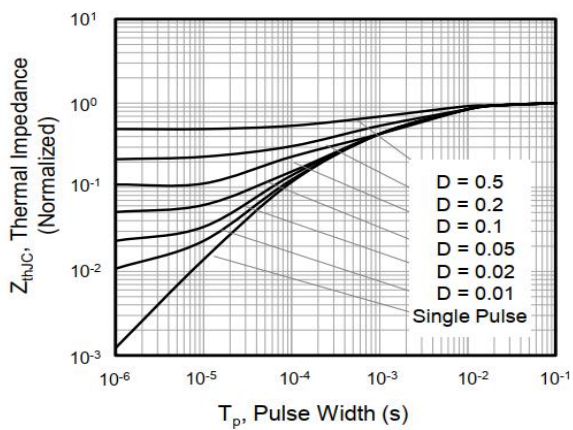
On-Resistance Variation vs. Junction Temperature



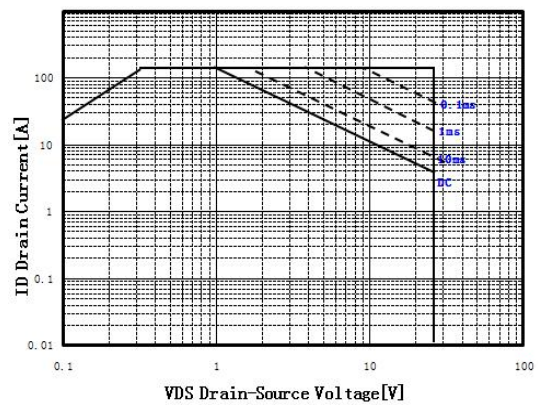
Threshold Voltage Variation vs. Junction Temperature



Transient Thermal Impedance



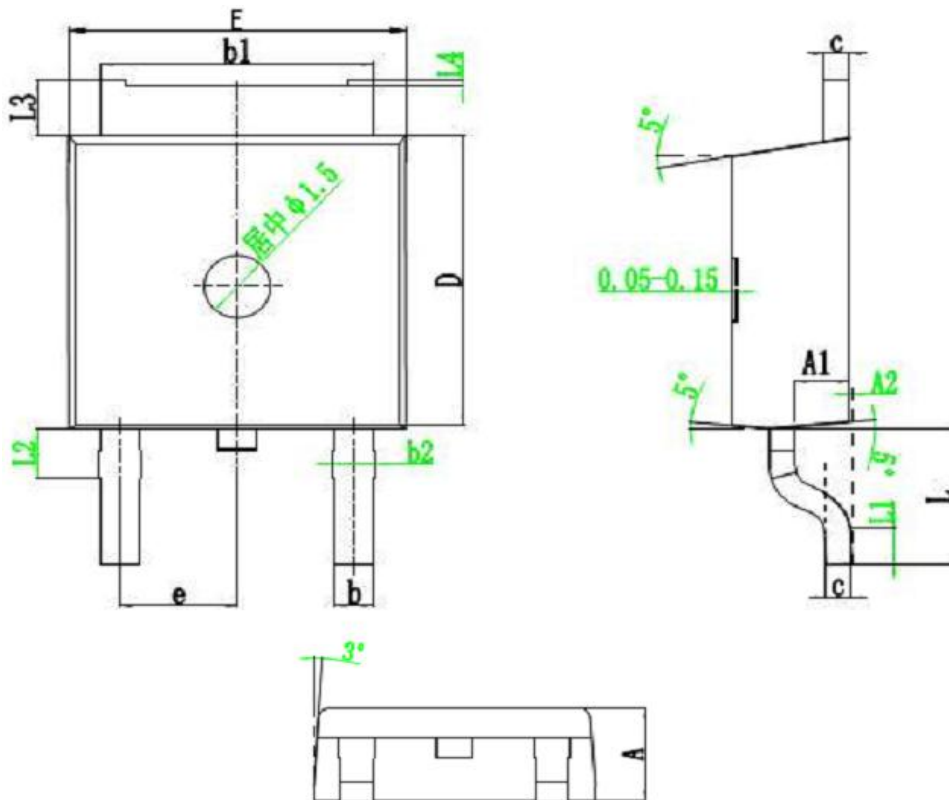
Maximum Safe Operation



外形尺寸 PACKAGE MECHANICAL DATA

DPAK

单位 Unit: mm





SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.40
A1	0.90	1.00	1.10
A2	0.00		0.10
b	0.71	0.81	0.91
b1	5.20	5.30	5.40
b2	0.85	0.95	1.05
c	0.47	0.508	0.55
D	6.00	6.15	6.30
E	6.45	6.60	6.75
e	2.186	2.286	2.386
L	2.50	2.70	2.90
L1	0.95	1.15	1.35
L2	1.90	2.00	2.10
L3	0.868	0.968	1.068
L4	0.05	0.1	0.15



**注意事项**

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