



MT20N150A

主要参数 MAIN CHARACTERISTICS

I_D	16A
V_{DS}	200V
$R_{DS(on)-max}$ (@ $V_{GS}=10V$)	0.15 Ω
Q_g-typ	29.69nC

用途

- 电信与工业领域隔离 DC/DC 转换
- 同步整流领域
- 汽车应用
- 不间断电源

APPLICATIONS

- Isolated DC/DC Converters in Telecom and Industrial
- Synchronous Rectification
- Automotive
- UPS

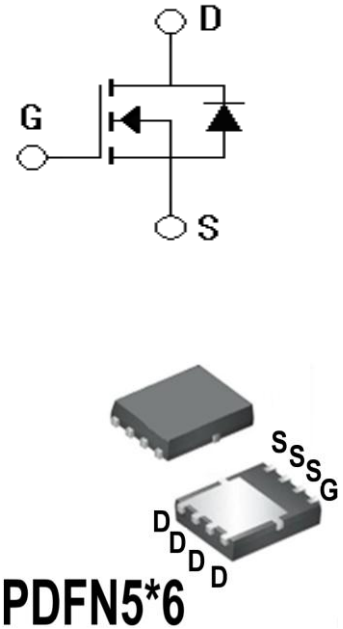
产品特性

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

FEATURES

- Low gate charge
- Low $R_{DS(on)}$
- 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		
MT20N150A-AC-B	MT20N150A-AC-BR	MT20N150A-AC-A	MT20N150A-AC-AR	MT20N150A	PDFN5×6

绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		MT20N150A	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	200	V
连续漏极电流 Drain Current -continuous	I_{D} $T=25^{\circ}\text{C}$	16*	A
	I_{D} $T=100^{\circ}\text{C}$	10*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	64*	A
最高栅源电压 Gate-Source Voltage	V_{GSS}	+20/-20V	V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2)	E_{AS}	100	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	50	A
耗散功率 Power Dissipation	P_{D} $T_c=25^{\circ}\text{C}$ -Derate above 25°C	82	W
		0.66	W/ $^{\circ}\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	$T_{\text{J}}, T_{\text{STG}}$	-55~+150	$^{\circ}\text{C}$
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_{L}	300	$^{\circ}\text{C}$

*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}	$I_D=250\mu A, V_{GS}=0V$	200	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V, V_{GS}=0V,$ $T_C=25^{\circ}C$	-	-	1	μA
		$V_{DS}=200V, V_{GS}=0V,$ $T_C=100^{\circ}C$	-	-	250	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=9A$	-	0.125	0.15	Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	1422	-	pF
输出电容 Output capacitance	C_{oss}		-	104	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	54	-	pF



**电特性 ELECTRICAL CHARACTERISTICS****开关特性 Switching Characteristics**

延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=100V, I_D=9A, R_G=25\Omega$ $V_{GS}=10V$ (note 3, 4)	-	15	-	ns
上升时间 Turn-On rise time	t_r		-	40.2	-	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	83.8	-	ns
下降时间 Turn-Off Fall time	t_f		-	45.8	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=100V$, $I_D=9A$ $V_{GS}=10V$ (note 3, 4)	-	29.69	-	nC
栅—源电荷 Gate-Source charge	Q_{gs}		-	8.37	-	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}		-	8.64	-	nC

漏—源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings

正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, V_{GS}=0V, I_S=9A$	-	-	0.82	V
正向连续电流 Diode continuous forward current	I_S	$V_G=V_D=0V, \text{force current}$			16	A
正向脉冲电流 Diode pulse current	I_{SM}				64	A
反向恢复时间 Reverse recovery time	T_{rr}	$T_J=25^\circ C, I_F=9A, V_{DD}=50V$, $dI_F/dt=100A/\mu A$ (note 3)	-	87.2	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	240.1	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单位 Unit
		MT20N024	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	1.512	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	38.77	$^\circ C/W$

注释:

1: 脉冲宽度由最高结温限制

2: $V_{DD}=25V, L=0.1mH, R_G=25\Omega, I_{AS}=18A$ 起始结温
 $T_J=25^\circ C$ 3: 脉冲测试: 脉冲宽度 $\leq 400\mu s$, 占空比 $\leq 2\%$

4: 基本与工作温度无关

Notes:

1: Pulse width limited by maximum junction
temperature2: $V_{DD}=25V, L=0.1mH, R_G=25\Omega, I_{AS}=18A$ Starting
 $T_J=25^\circ C$ 3: Pulse Test: Pulse Width $\leq 400\mu s$, Duty Cycle $\leq 2\%$

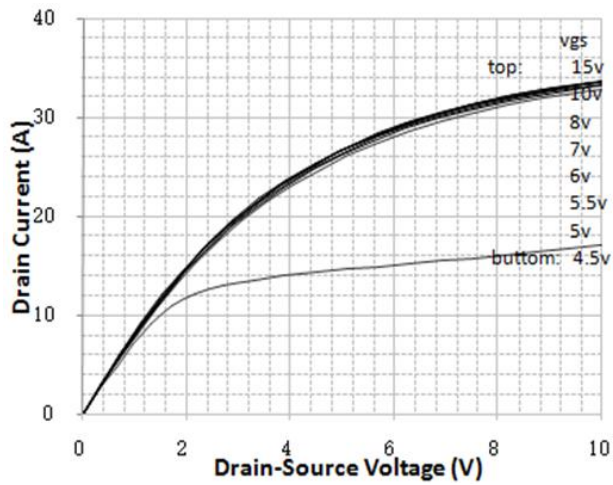
4: Essentially independent of operating temperature



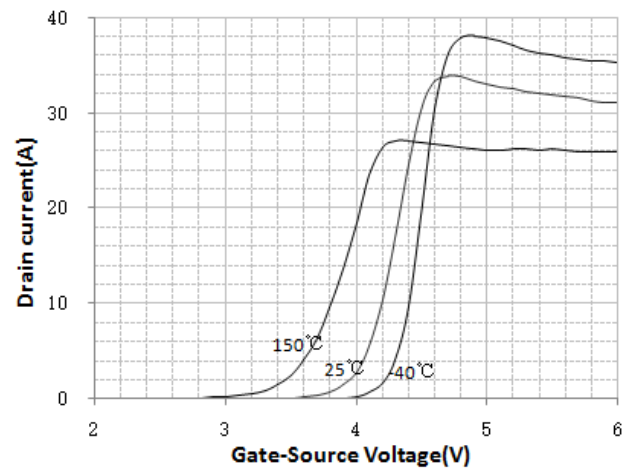


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

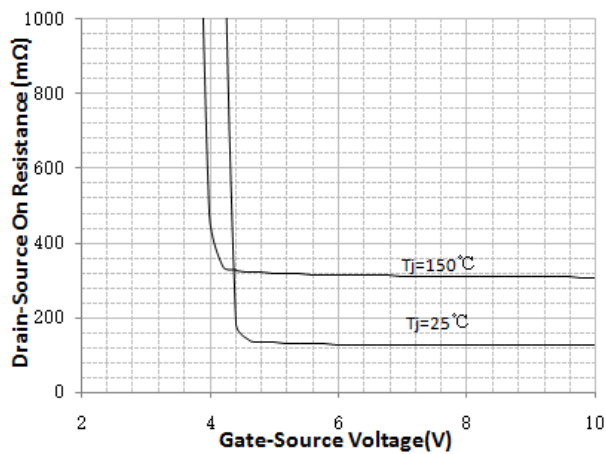
On-Region Characteristics



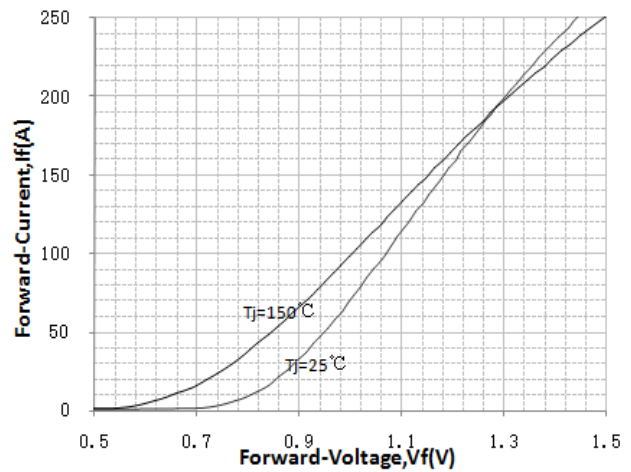
Transfer Characteristics



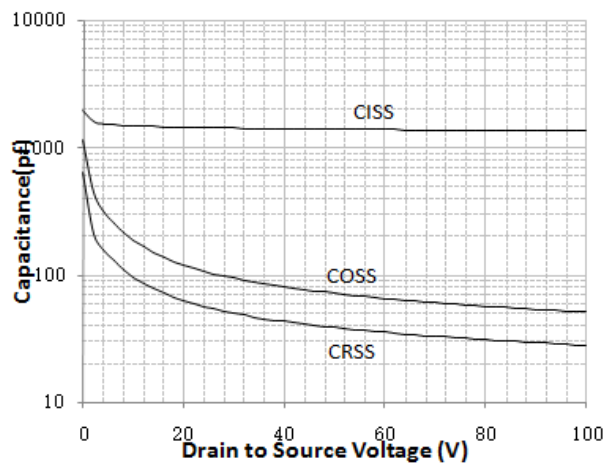
On-Resistance Variation vs. Drain Current and Gate Voltage



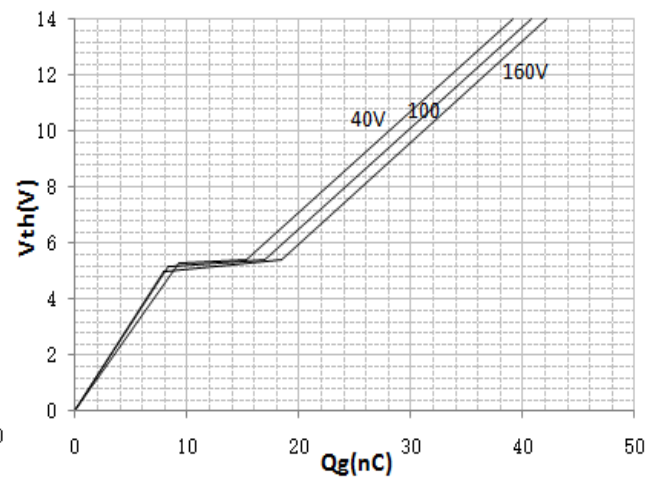
Body Diode Forward Voltage Variation vs. Source Current



Capacitance Characteristics

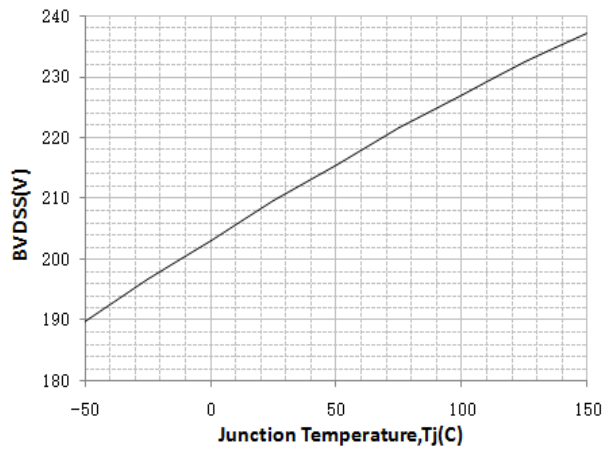
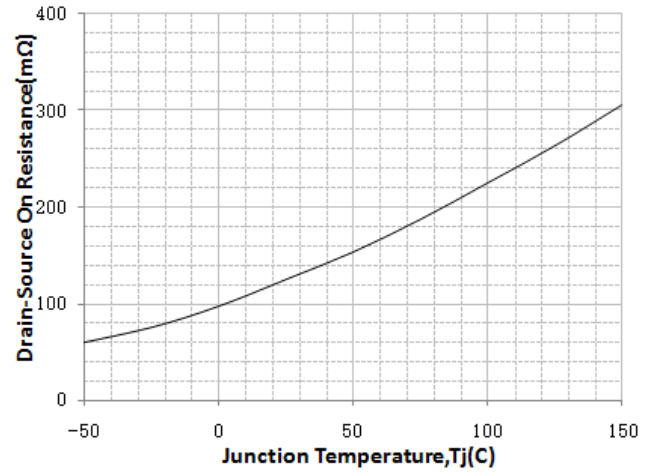


Gate Charge Characteristics

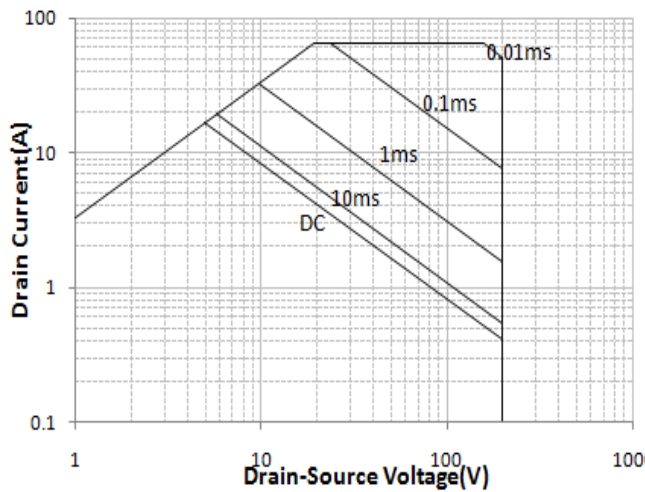




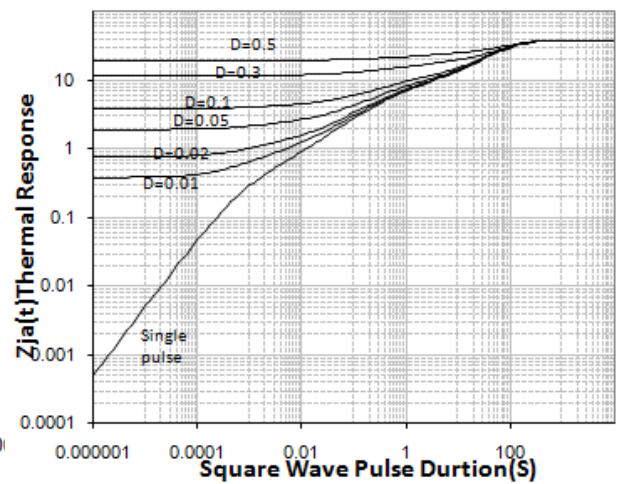
特征曲线 ELECTRICAL CHARACTERISTICS (curves)

Breakdown Voltage Variation
vs. TemperatureOn-Resistance Variation
vs. Temperature

Maximum Safe Operation Area



Transient Thermal Response Curve

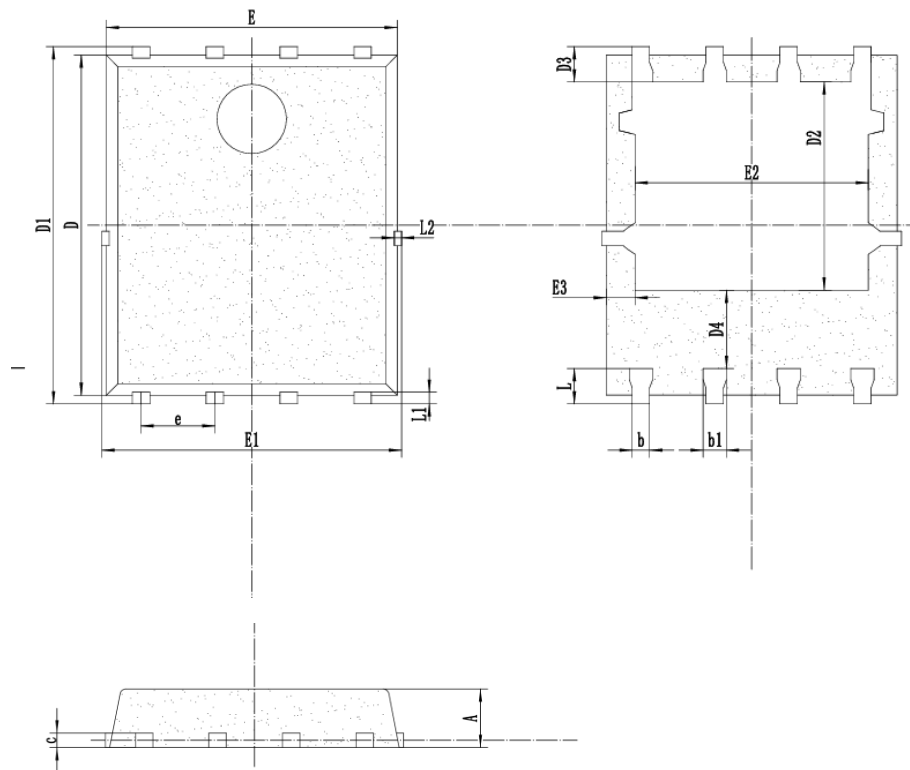




外形尺寸 PACKAGE MECHANICAL DATA

PDFN5×6

单位 Unit: mm



SYMBOL	mm	
	MIN	MAX
A	0.80	1.20
b	0.10	0.45
b1	0.20	0.55
c	0.10	0.40
D	5.60	6.10
D1	5.90	6.40
D2	3.20	3.80
D3	0.35	0.85
D4	1.00	1.65
E	4.75	5.25
E1	4.85	5.45
E2	3.70	4.30
E3	0.20	0.80
e	1.27 REF	
L	0.35	0.85
L1	—	0.35
L2	—	0.25



注意事项

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