



MT25N018A

主要参数 MAIN CHARACTERISTICS

I_D	93A
V_{DS}	250V
$R_{dson-max}$ (@ $V_{GS}=10V$)	18.0m Ω
Q_g-typ	260nC

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

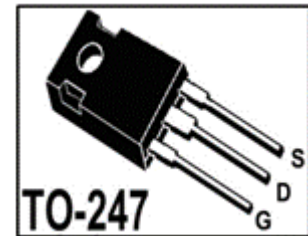
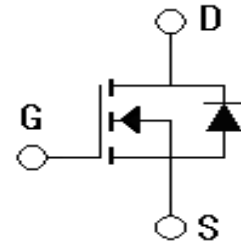
产品特性

- 低栅极电荷
- 低 R_{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

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		
MT25N018A-GE-B	MT25N018A-GE-BR	N/A	N/A	MT25N018A	TO-247

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
		MT25N018A	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	250	V
连续漏极电流 Drain Current -continuous	I_D $T=25^{\circ}\text{C}$	93*	A
	I_D $T=100^{\circ}\text{C}$	66*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I_{DM}	370*	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}	900	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I_{AS}	60	A
耗散功率 Power Dissipation	P_D $T_c=25^{\circ}\text{C}$ -Derate above 25°C	500	W
		4.0	W/ $^{\circ}\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{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}	$I_D=250\mu A, V_{GS}=0V$	250	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=250V, V_{GS}=0V,$ $T_C=25^{\circ}C$	-	-	1	μA
		$V_{DS}=250V, V_{GS}=0V,$ $T_C=100^{\circ}C$	-	-	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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	3		5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=56A$	-	15.5	18	m Ω
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=50V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	12921	-	pF
输出电容 Output capacitance	C_{oss}		-	655	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	339	-	pF





电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics

延迟时间 Turn-On delay time	$t_{d(on)}$	$V_{DD}=163V, I_D=56A, R_G=1.0\Omega$ $V_{GS}=10V$ (note 3, 4)	-	42.8	-	ns
上升时间 Turn-On rise time	t_r		-	72.6	-	ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	80.6	-	ns
下降时间 Turn-Off Fall time	t_f		-	59.2	-	ns
栅极电荷总量 Total Gate Charge	Q_g	$V_{DS}=125V$, $I_D=56A$ $V_{GS}=10V$ (note 3, 4)	-	266.8	-	nC
栅-源电荷 Gate-Source charge	Q_{gs}		-	101.8	-	nC
栅-漏电荷 Gate-Drain charge	Q_{gd}		-	98.7	-	nC

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

正向连续电流 Diode continuous forward current	I_S	$V_G=V_D=0V$, force current			93	A
正向脉冲电流 Diode pulse current	I_{SM}				370	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, V_{GS}=0V, I_S=56A$	-	-	0.8	V
反向恢复时间 Reverse recovery time	T_{rr}	$T_J=25^\circ C, I_F=56A$, $dI_F/dt=100A/\mu A$ (note 3)	-	161	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	1236	-	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	$R_{th(j-c)}$	0.168	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	33.2	$^\circ C/W$

注释:

1: 脉冲宽度由最高结温限制

2: $V_{DD}=50V, L=0.5mH, R_G=25\Omega$, 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: $V_{DD}=50V, L=0.5mH, R_G=25\Omega$, Starting $T_J=25^\circ C$ 3: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

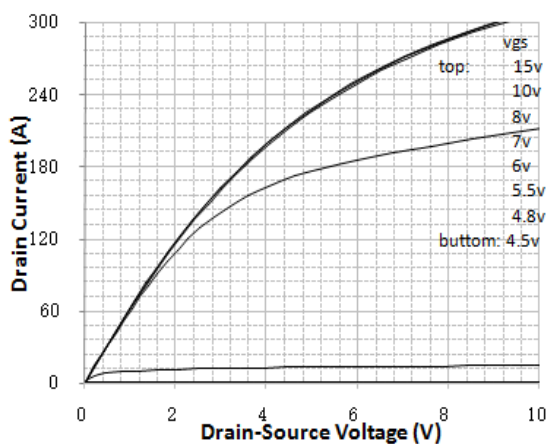
4: Essentially independent of operating temperature



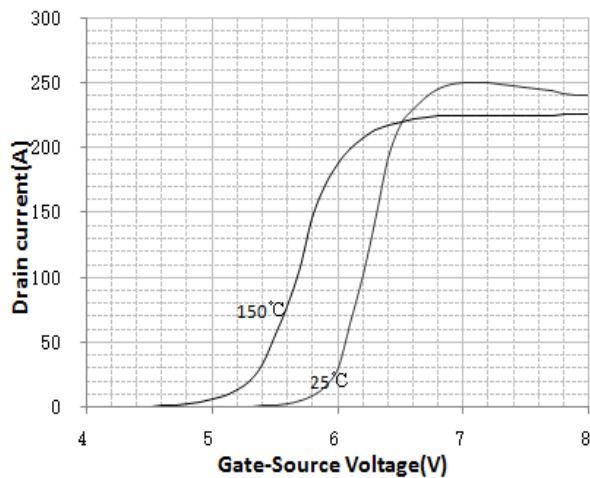


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

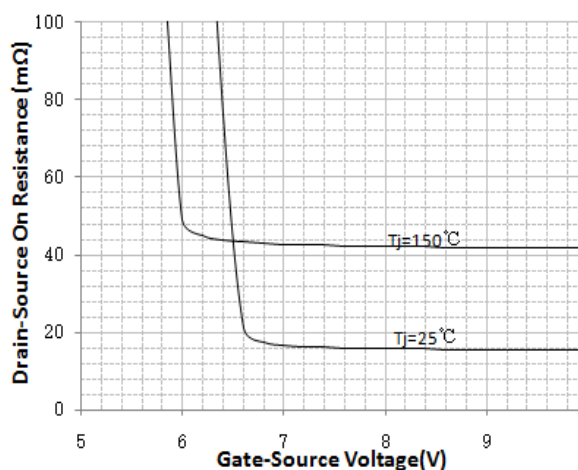
On-Region Characteristics



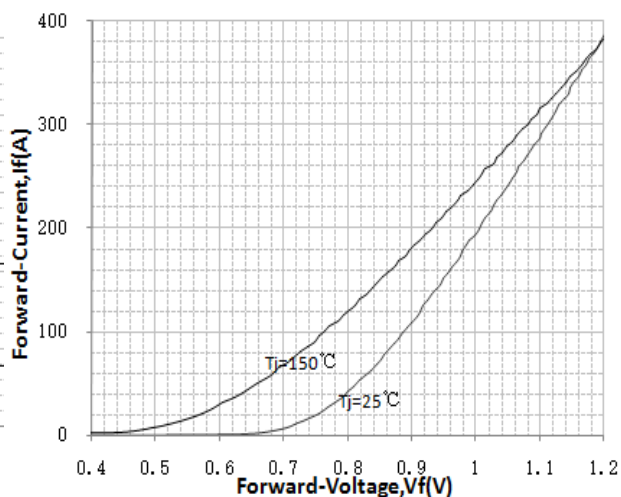
Transfer Characteristics



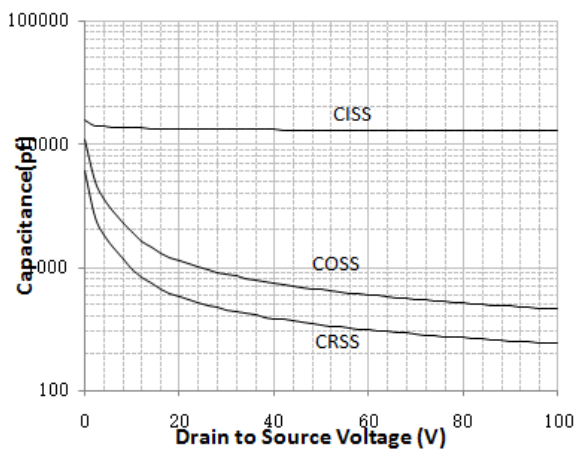
On-Resistance Variation vs. Drain Current and Gate Voltage



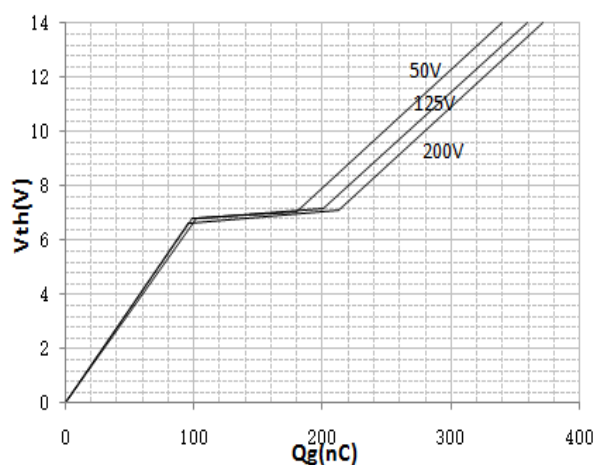
Body Diode Forward Voltage Variation vs. Source Current



Capacitance Characteristics

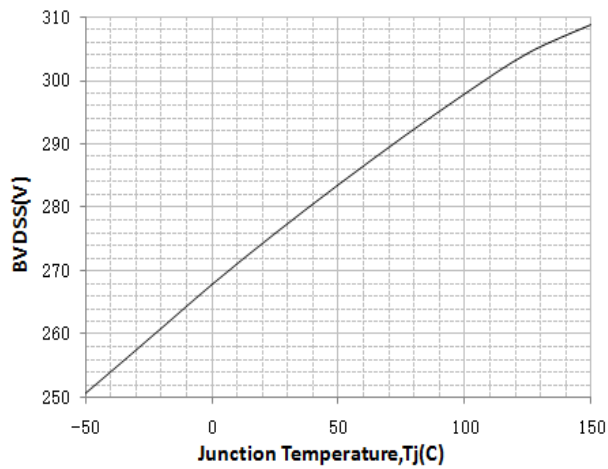
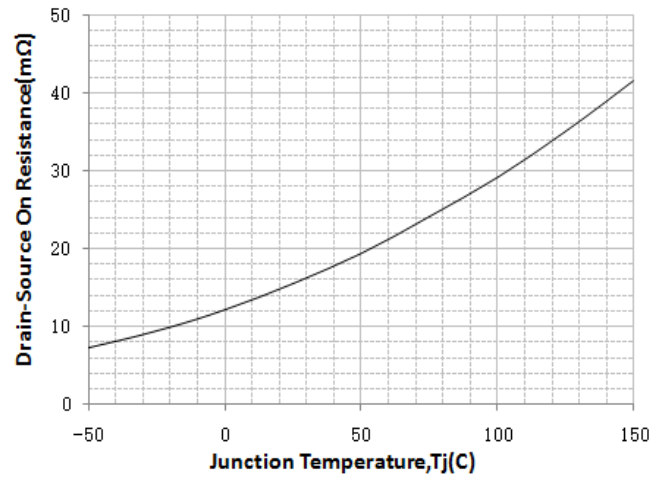


Gate Charge Characteristics

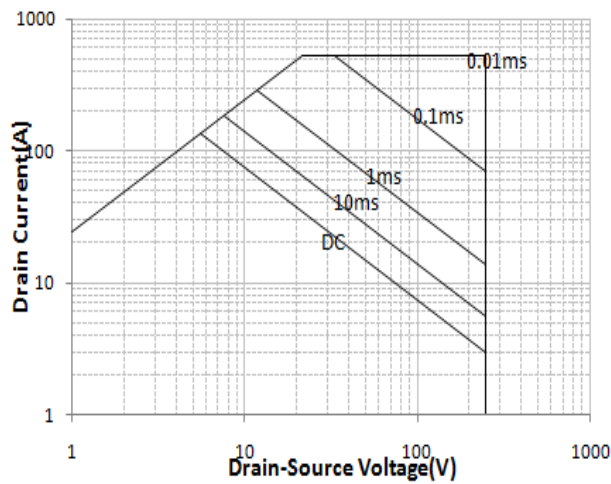




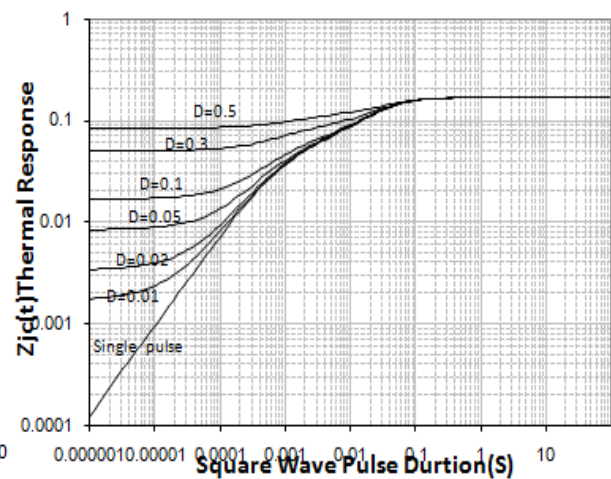
特征曲线 ELECTRICAL CHARACTERISTICS (curves)

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

Maximum Safe Operation Area



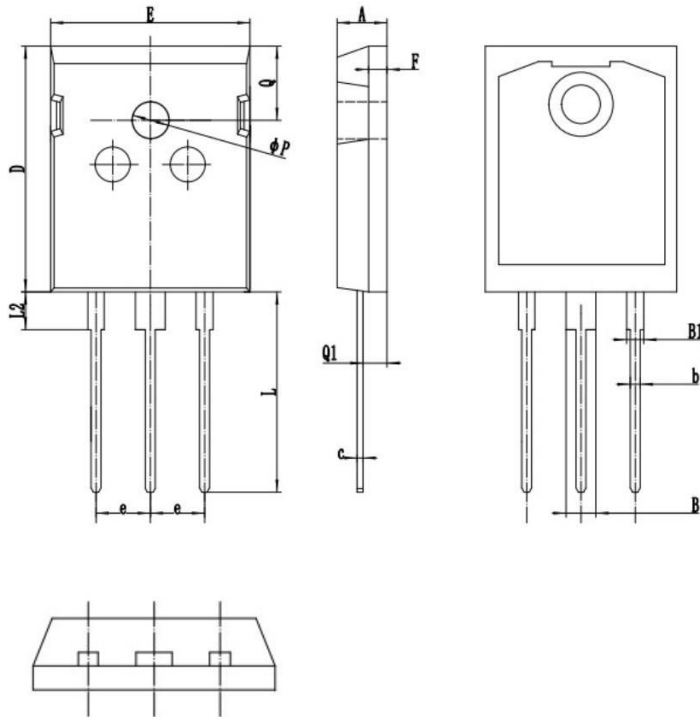
Transient Thermal Response Curve





TO-247

单位 Unit: mm



符号 symbol	mm	
	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70



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