



# XTMT10N101L

## 100V N-Channel MOSFET

### Product Description

$BV_{DSS}$	100	V
$I_D$	100	A
$R_{DS(ON),Typ.}$	3.8	$m\Omega$

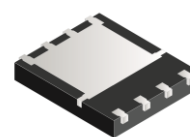
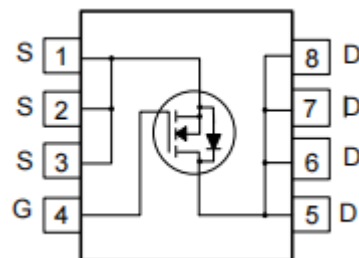
### General Features

- Advanced technology and cellular structure
- $R_{DS(ON),typ.}=3.8m\Omega@V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

### Applications

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

### 封装 Package



PDFN 5×6

Device	Package	Marking
XTMT10N101L	PDFN5*6	XTMT10N101L

### Absolute Maximum Ratings $T_j=25^\circ\text{C}$

Symbol	Parameter	Value	Unit
$V_{DSS}$	Drain-to-Source Voltage	100	V
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	
$I_D$	Continuous Drain Current	100	A
$I_{DM}$	Pulsed Drain Current at $V_{GS}=10V$	400	
$E_{AS}$	Single Pulse Avalanche Energy	240	mJ
$P_D$	Power Dissipation	132	W
$T_J \& T_{STG}$	Operating and Storage Temperature Range	-55 to 150	$^\circ\text{C}$

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.



## Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.95	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	50	
$T_{sold}$	Welding temperature	260	°C

## Electrical Characteristics $T_j=25^\circ\text{C}$

### OFF Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$BV_{DSS}$	Drain-to-Source Breakdown Voltage	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	-	-	1	uA	$V_{DS}=100V,$ $V_{GS}=0V, T_J=25^\circ\text{C}$
		-	-	3.0		$V_{DS}=100V,$ $V_{GS}=0V, T_J=125^\circ\text{C}$
$I_{GSS}$	Gate-to-Source Leakage Current	-	-	$\pm 100$	nA	$V_{GS}=\pm 20V, V_{DS}=0V$

### ON Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	-	3.8	5.0	m $\Omega$	$V_{GS}=10V, I_D=40A$
		-	5.7	7.5	m $\Omega$	$V_{GS}=4.5V, I_D=30A$
$V_{GS(TH)}$	Gate Threshold Voltage	1.4	-	2.4	V	$V_{DS}=V_{GS}, I_D=250\mu A$

**Dynamic Characteristics**

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$C_{iss}$	Input Capacitance	-	4739	-	pF	$V_{GS}=0V,$ $V_{DS}=50V,$ $f=1.0MHz$
$C_{rSS}$	Reverse Transfer Capacitance	-	16	-		
$C_{oss}$	Output Capacitance	-	622	-		
$Q_g$	Total Gate Charge	-	67	-	nC	$V_{DS}=50V, I_D=50A,$ $V_{GS}=10V$
$Q_{gs}$	Gate-to-Source Charge	-	24	-		
$Q_{gd}$	Gate-to-Drain (Miller) Charge	-	11	-		

**Resistive Switching Characteristics**

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$t_{d(ON)}$	Turn-on Delay Time	-	21	-	nS	$V_{DD}=50V, I_D=50A$ $V_{GS}=10V, R_G=3.0\Omega$
$t_{rise}$	Rise Time	-	80	-		
$t_{d(OFF)}$	Turn-Off Delay Time	-	69	-		
$t_{fall}$	Fall Time	-	30	-		

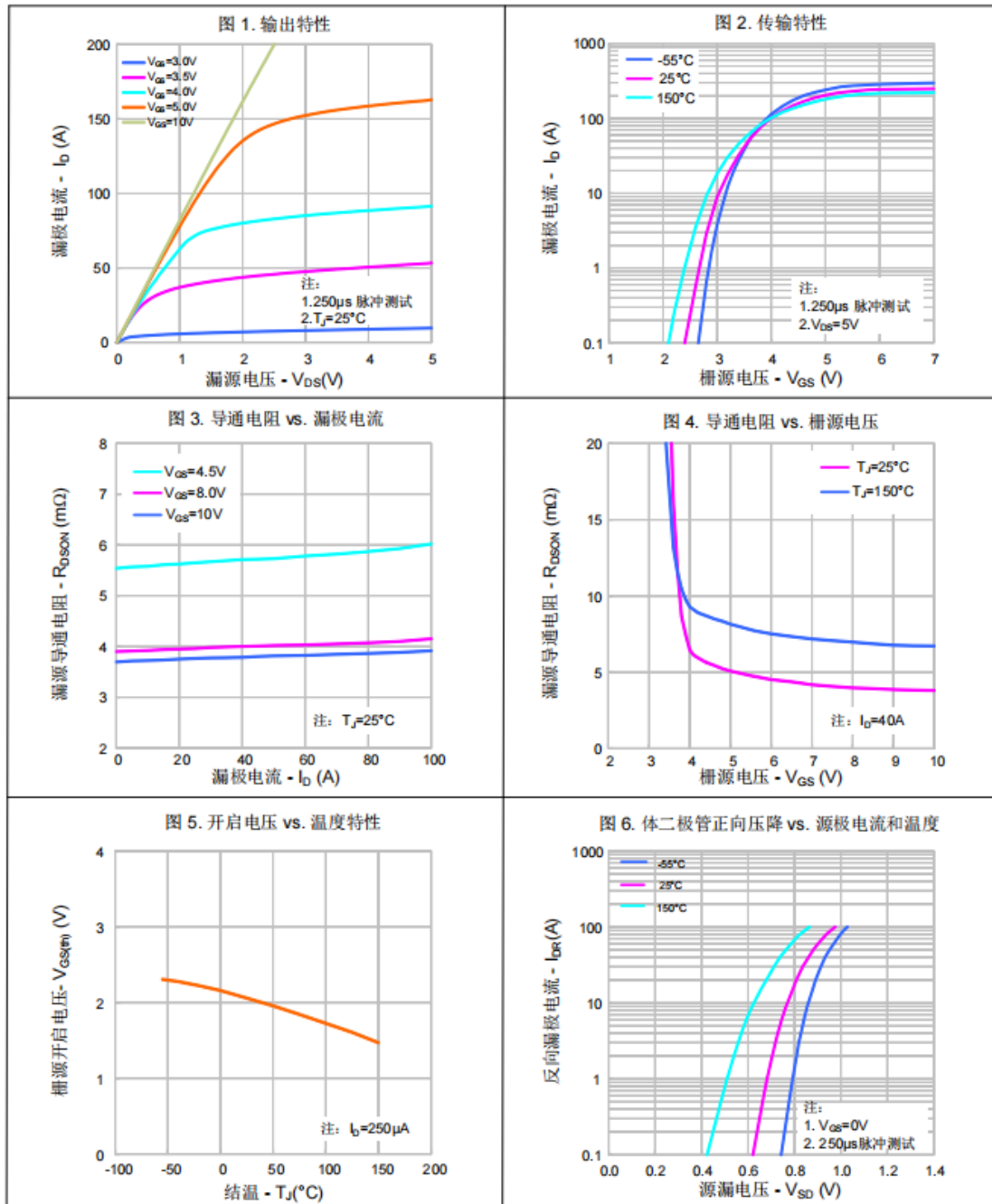
**Source-Drain Body Diode Characteristics**

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$I_{SD}$	Continuous Source Current	-	-	100	A	Integral PN-diode in MOSFET
$I_{SM}$	Pulsed Source Current	-	-	400		
$V_{SD}$	Diode Forward Voltage	-	-	1.4	V	$I_S=40A, V_{GS}=0V$
$t_{rr}$	Reverse Recovery Time	-	30	-	ns	$I_F=40A,$ $diF/dt=100A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	-	89	-	nC	

[1] Pulse width $\leq 380\mu s$ ; duty cycle $\leq 2\%$

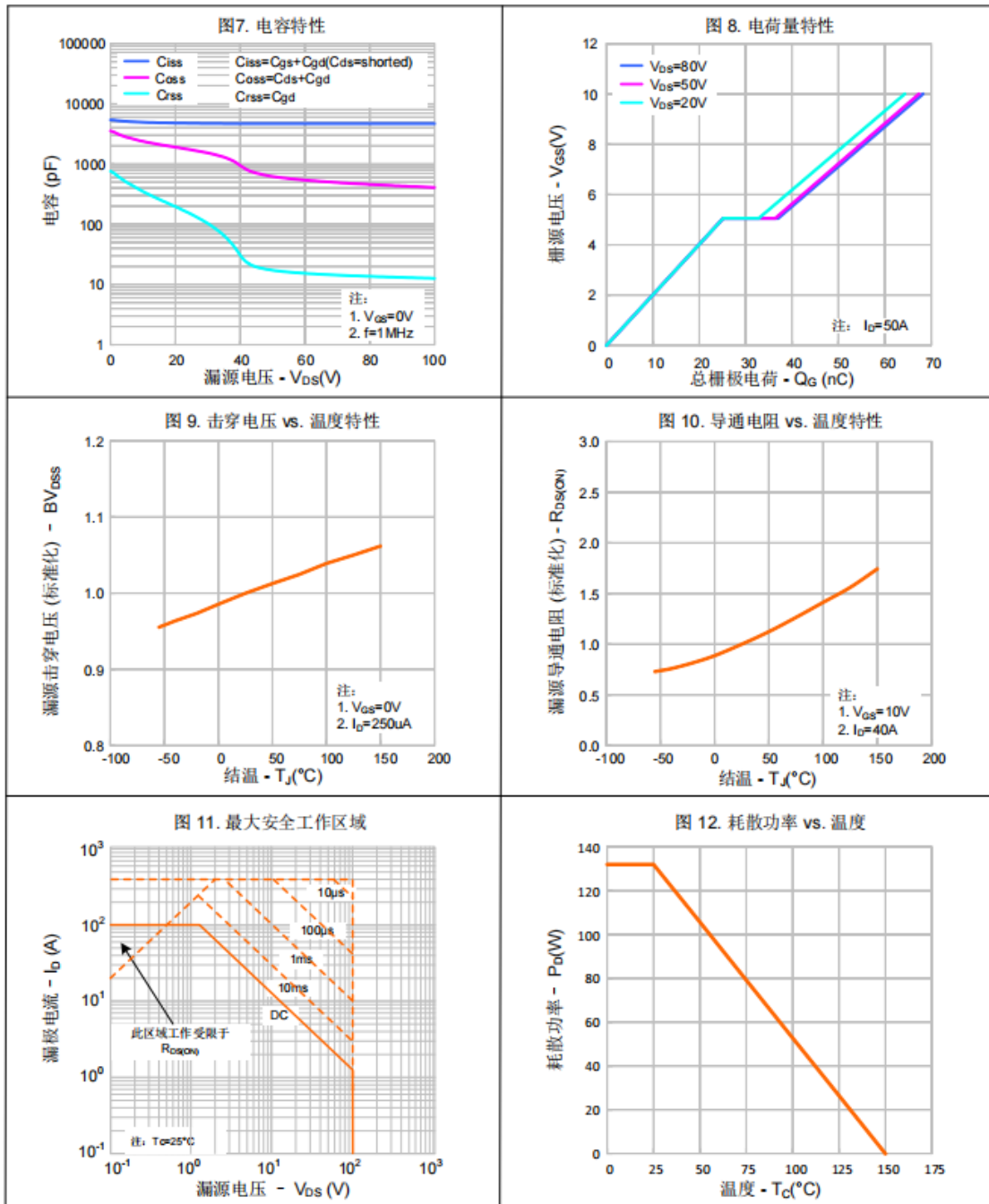


Typical Characteristics(Cont.)





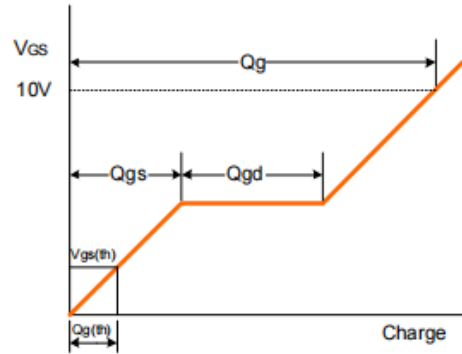
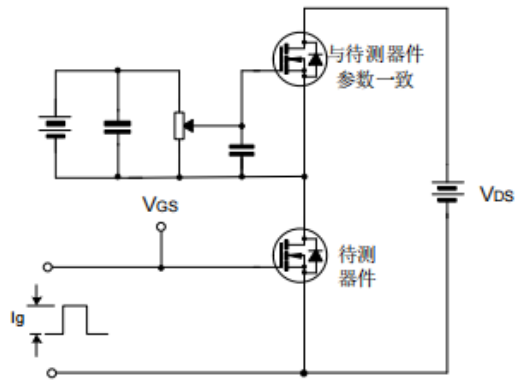
### Typical Characteristics(Cont.)



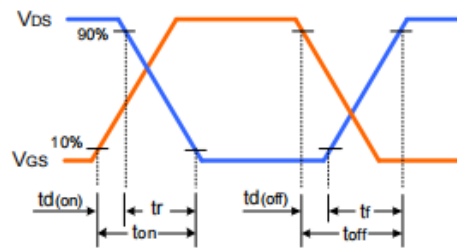
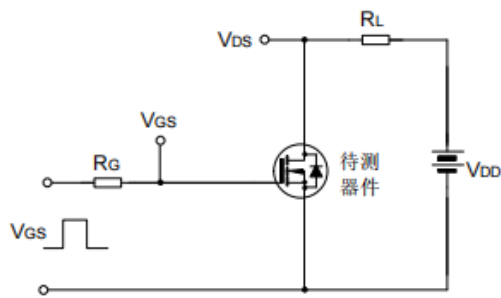


Test Circuits and Waveforms

栅极电荷量测试电路及波形图



开关时间测试电路及波形图



EAS测试电路及波形图

