



XTMS65R550F(F1)

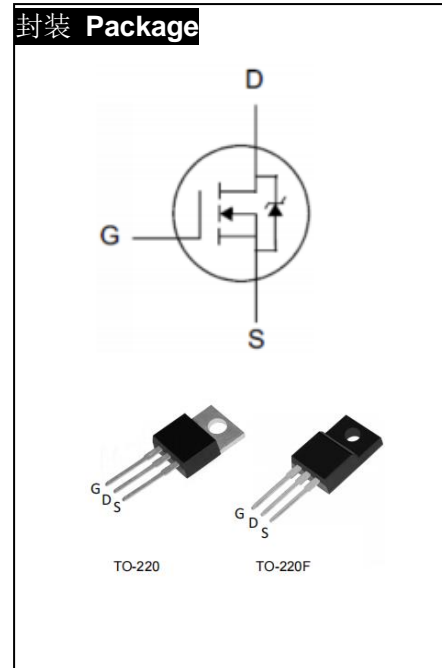
650V N-ch Planar MOSFET

Product Description

BV_{DSS}	650	V
I_D	7	A
$R_{DS(ON),Typ.}$	0.55	Ω

General Features

- New revolutionary high voltage technology
- $R_{DS(ON),typ.}=0.55\Omega@V_{GS}=10V$
- High peak current capability
- Ultra low Gate Charge
- Periodic avalanche rated



Device	Package	Marking
XTMS65R550F1	TO-220	XTMS65R550F1
XTMS65R550F	TO-220F	XTMS65R550F

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

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-to-Source Voltage	650	V
V_{GSS}	Gate-to-Source Voltage	± 30	
I_D	Continuous Drain Current	7	A
I_{DM}	Pulsed Drain Current at $V_{GS}=10V$	28	
E_{AS}	Single Pulse Avalanche Energy	261	mJ
P_D	Power Dissipation	30	W
	Derating Factor above 25°C	0.24	$W/^\circ\text{C}$
$T_J \& T_{STG}$	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	4.17	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	62.5	$^{\circ}C/W$

Electrical Characteristics $T_j=25^{\circ}C$ **OFF Characteristics**

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
BV_{DSS}	Drain-to-Source Breakdown Voltage	650	-	-	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	-	-	1.0	μA	$V_{DS}=600V, V_{GS}=0V$
I_{GSS}	Gate-to-Source Leakage Current	-	-	+100	nA	$V_{GS}=+30V, V_{DS}=0V$
		-	-	-100		$V_{GS}=-30V, V_{DS}=0V$

ON Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	-	0.55	0.64	Ω	$V_{GS}=10V, I_D=3.5A$
$V_{GS(TH)}$	Gate Threshold Voltage	2.0	-	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$



Dynamic Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
C_{iss}	Input Capacitance	-	423	-	pF	$V_{GS}=0V$, $V_{DS}=100V$, $f=1.0MHz$
C_{rss}	Reverse Transfer Capacitance	-	1.9	-		
C_{oss}	Output Capacitance	-	27	-		
Q_g	Total Gate Charge	-	16	-	nC	$V_{DD}=520V$, $I_D=7A$, $V_{GS}=10V$
Q_{gs}	Gate-to-Source Charge	-	3.6	-		
Q_{gd}	Gate-to-Drain (Miller) Charge	-	8.3	-		

Resistive Switching Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$t_{d(ON)}$	Turn-on Delay Time	-	10	-	ns	$V_{DD}=325V$, $I_D=7A$, $V_{GS}=10V$ $R_g=24\Omega$
t_{rise}	Rise Time	-	29	-		
$t_{d(OFF)}$	Turn-Off Delay Time	-	44	-		
t_{fall}	Fall Time	-	26	-		

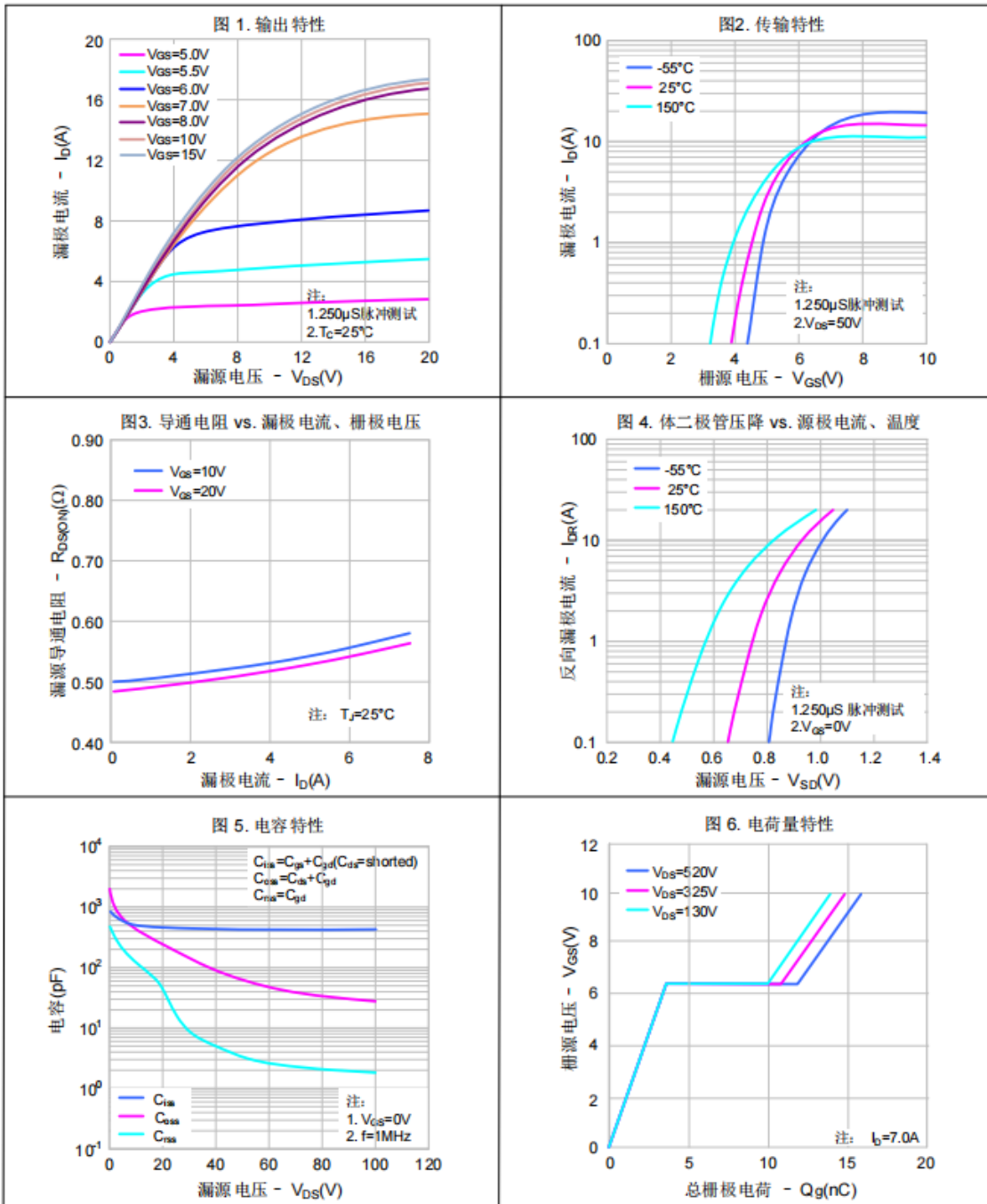
Source-Drain Body Diode Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
V_{SD}	Diode Forward Voltage	-	-	1.4	V	$I_S=7A$, $V_{GS}=0V$
t_{rr}	Reverse Recovery Time	-	346	-	ns	$V_{GS}=0V$ $I_S=7A$, $di/dt=100A/\mu s$
Q_{rr}	Reverse Recovery Charge	-	2.5	-	uC	

[1] Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$

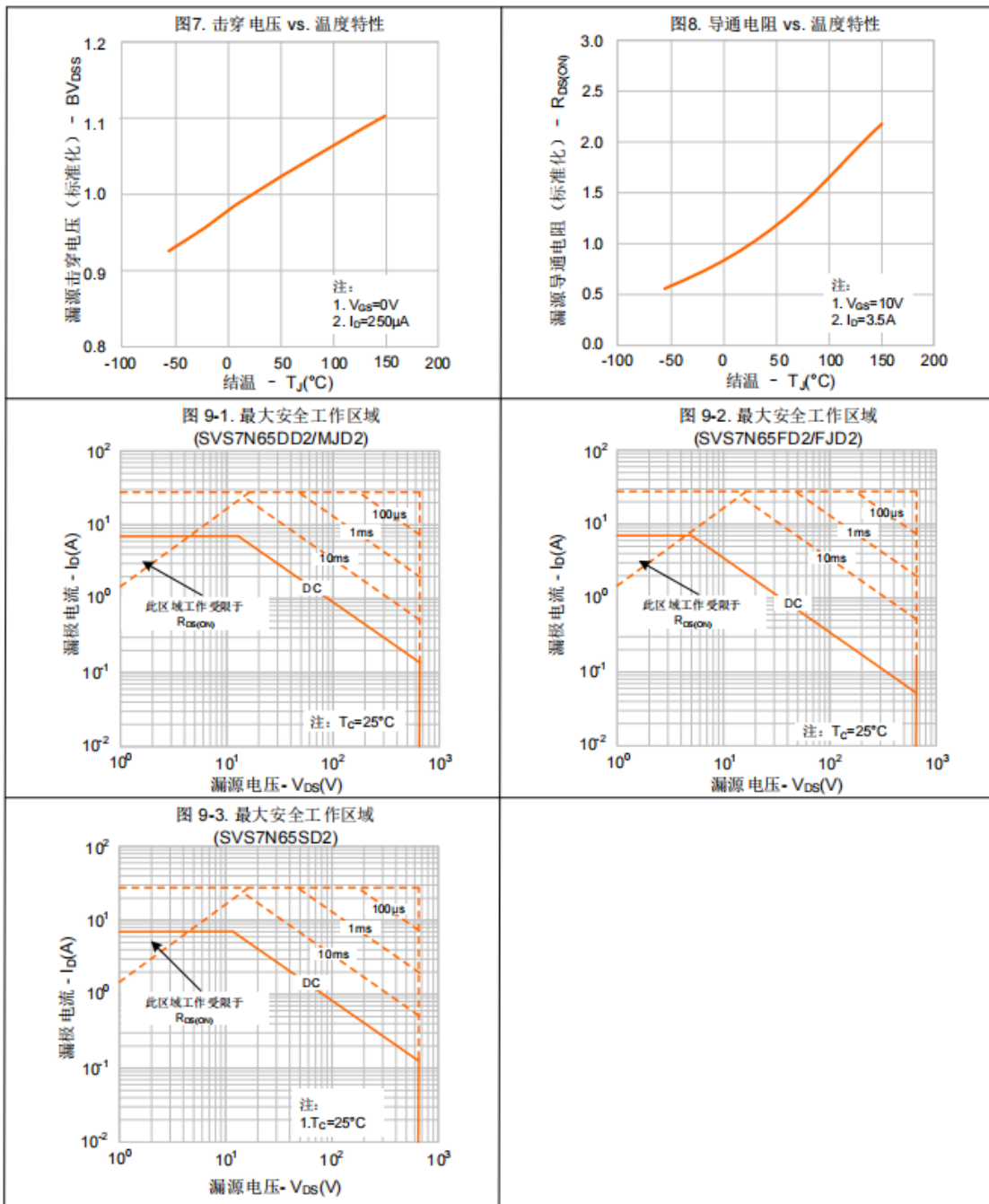


Typical Characteristics





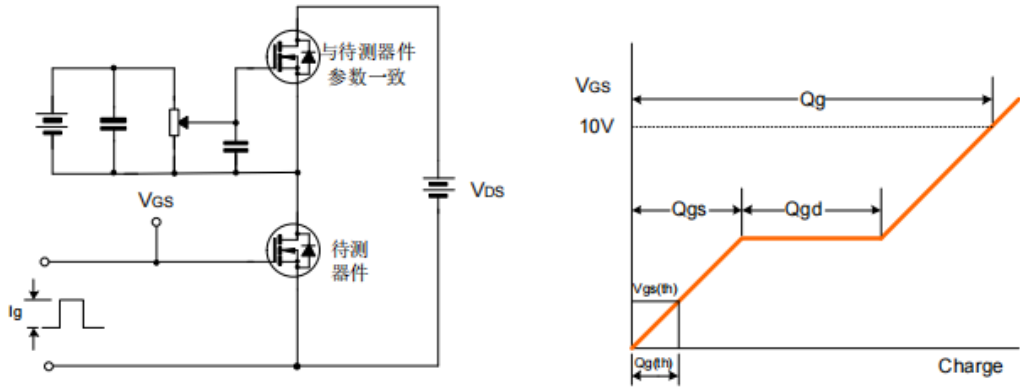
Typical Characteristics(Cont.)



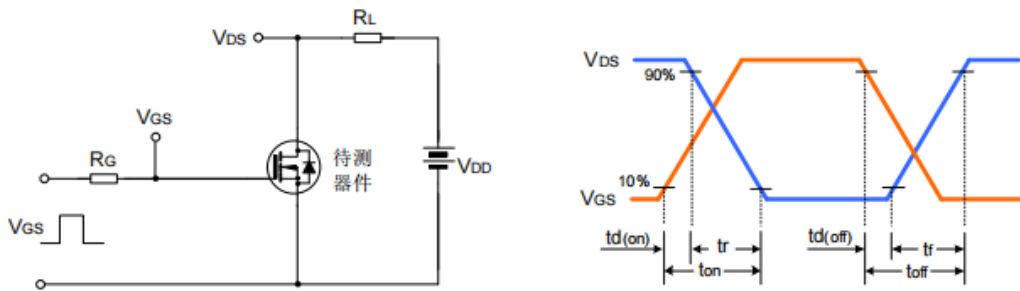


Test Circuits and Waveforms

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

