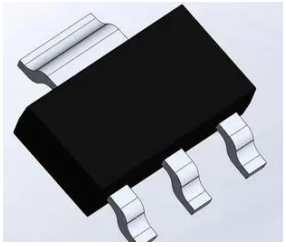
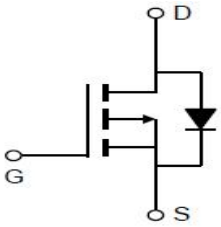
-60V_{DS}/±20V_{GS} P-Channel Advanced Mode MOSFET

Features

SOT-223

- V_{DS}=-60V,I_D=-4A
- $R_{DS(ON)}$=85mΩ（TYP.）V_{GS}=-10V
- $R_{DS(ON)}$=105mΩ（TYP.）V_{GS}=-4.5V
- Fast Switching
- Low On-Resistance





Applications

- Switch switching
- Power management in portable/desktop PCs

Ordering Information

Device	package	Device Marking	Package Qty.
ISP650P06NM	SOT-223	650P06NM	2500/PCS

Absolute Maximum Ratings (T_a=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	-60	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_a=25℃)	I_D	-4	A
Continuous Drain Current (T_a=70℃)		-2.5	A
Pulesd Drain Current	I_{DM}	-20	A
Avalanche Energy, Single Pulsed	E_{AS}	13	mJ
Maximum Power Dissipation (T_a=25℃)	P_D	1.5	W
Maximum Power Dissipation (T_a=70℃)		0.6	W
Operating,Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=-250μA	-1.4	-1.9	-2.4	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	V_{GS}=-10V,I_D=-1A	-	60	90	mΩ
		V_{GS}=-4.5V,I_D=-1A	-	85	110	

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	75	-	℃/ W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	24	-	℃/ W

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=-15V	-	1150	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	95	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	77	-	
Gate Resistance	R_g	f=1MHz	-	7.5	-	Ω
Total Gate Charge	Q_g	V_{DS}=-15V	-	46	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=-10V	-	15.5	-	
Gate Drain Charge	Q_{gd}	I_D=-15A	-	18	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=-10V	-	15	-	ns
Rise time	t_r	V_{DS}=-15V	-	17	-	
Turn-off delay Time	$t_{d(off)}$	R_L=1Ω	-	68	-	
Fall time	t_f	R_G=3Ω	-	39	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{SD}=-1A	-	-0.9	-1.2	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_{SD}=-15A	-	37	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=100A/μs	-	5.3	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

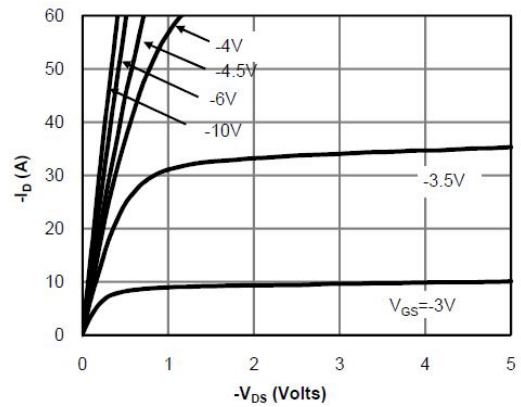


Figure 2. Transfer Characteristics

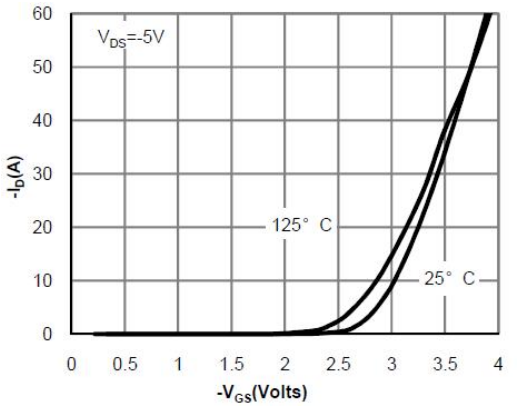


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

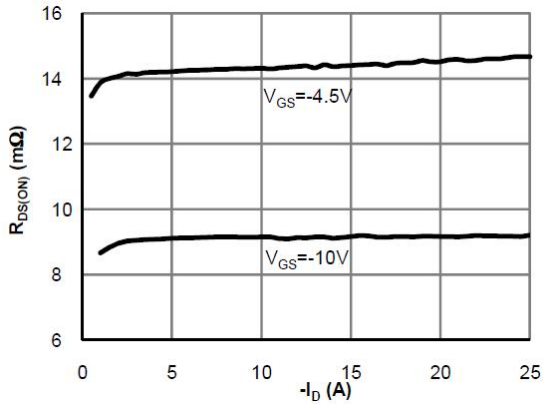


Figure 4. On-Resistance vs. Junction Temperature

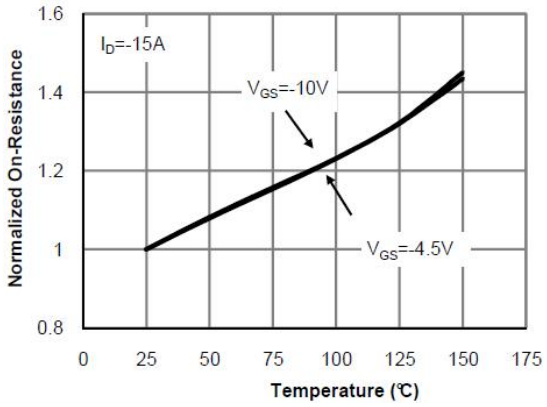


Figure 5. On-Resistance vs. Gate-Source Voltage

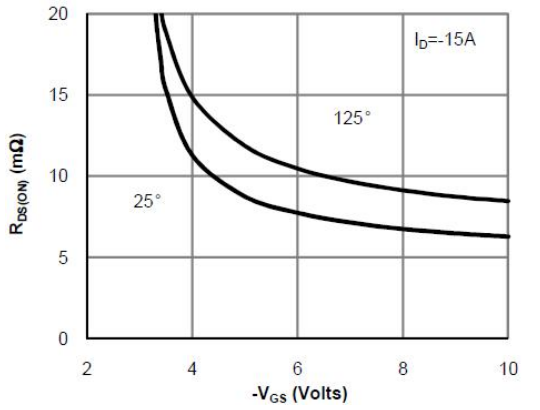


Figure 6. Body-Diode Characteristics

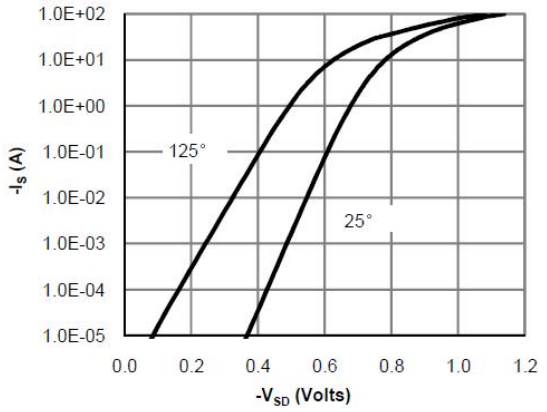


Figure 7. Gate-Charge Characteristics

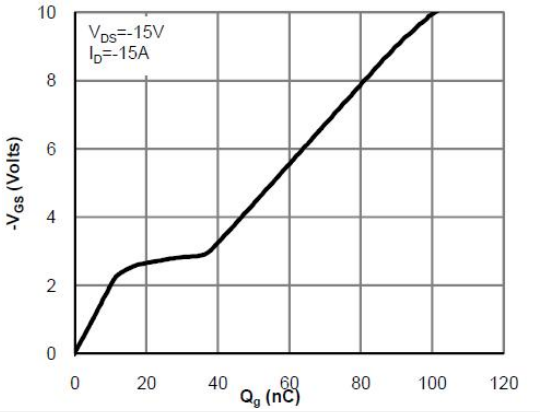


Figure 8. Capacitance Characteristics