P-Channel Enhancement Mode MOSFET
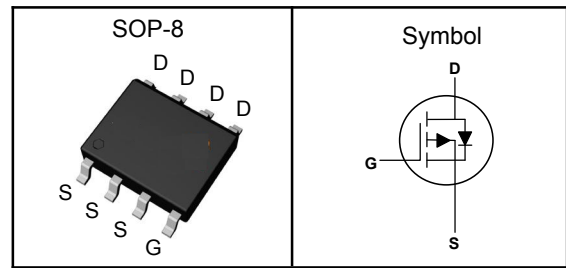
Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

V_{DSS}	-60	V
$R_{DS(ON)-Typ}$	68	mΩ
I_D	-4.6	A

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Absolute Maximum Ratings (T_A=25℃, Unless Otherwise Noted)

Symbol	Parameter		P-Channel	Unit
V_{DSS}	Drain-Source Voltage		-60	V
V_{GSS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
I_{DM} [①]	Pulse Drain Current Tested		-18.4	A
I_D	Continuous Drain Current		-4.6	A
P_D	Maximum Power Dissipation	T_A=25℃	3.1	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$ [③]	Thermal Resistance Junction-Ambient₁	40	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case	24	℃/W

Note ①: Max. current is limited by bonding wire.

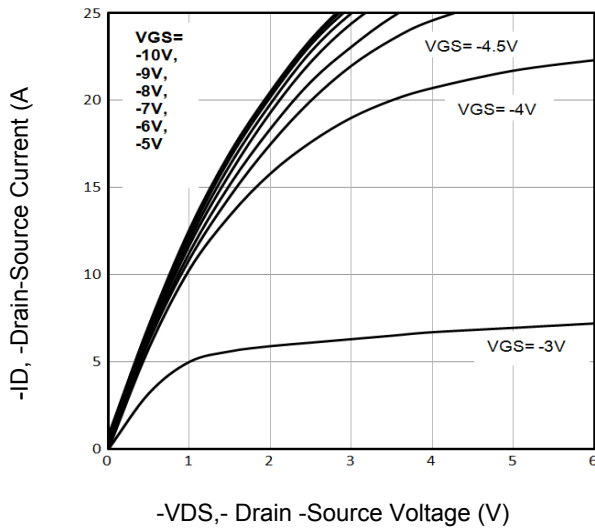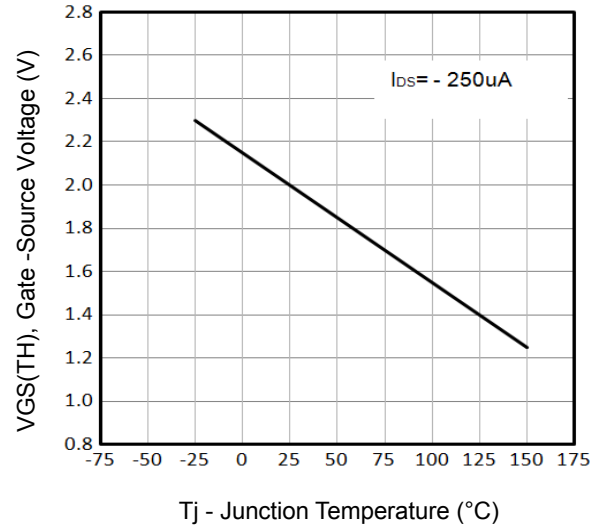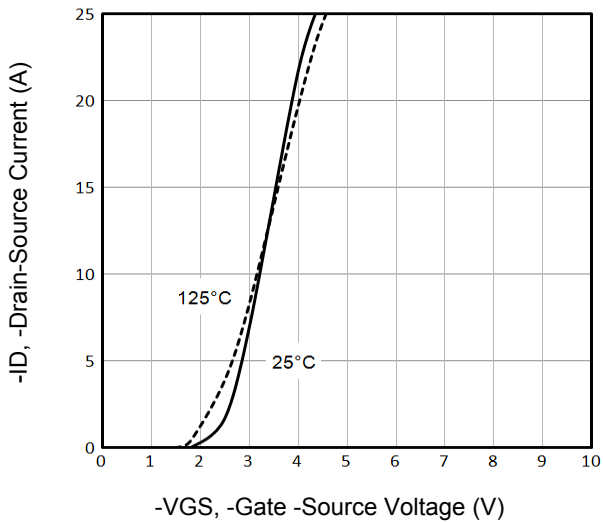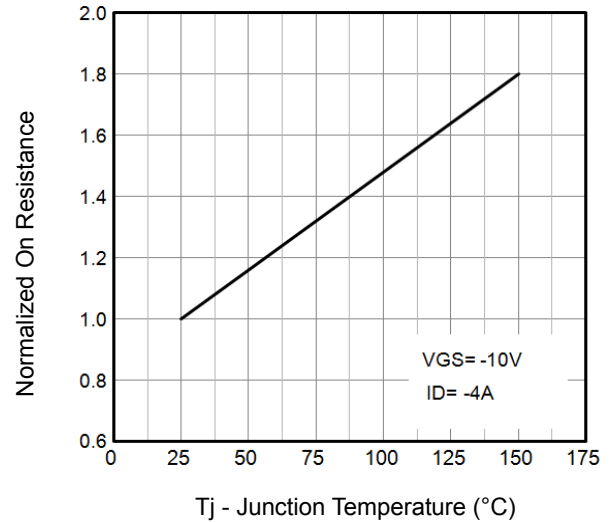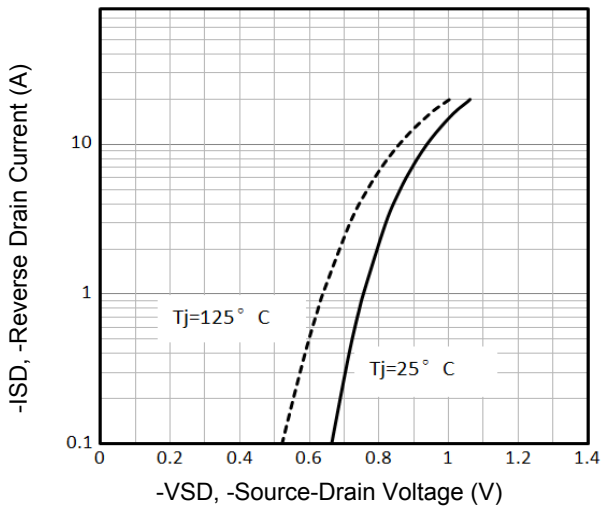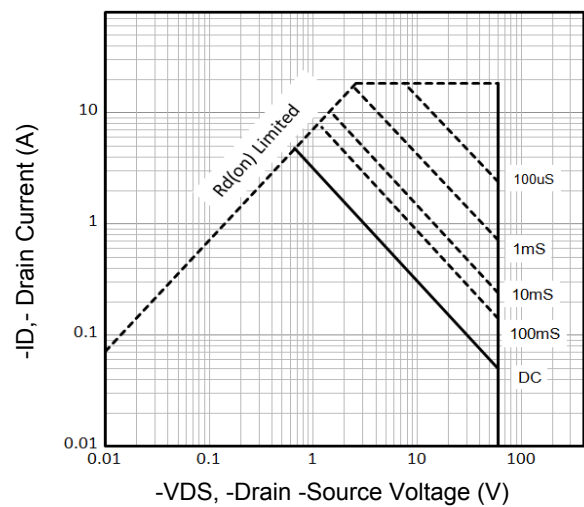Note ②: UIS tested and pulse width are limited by maximum junction temperature 150℃.
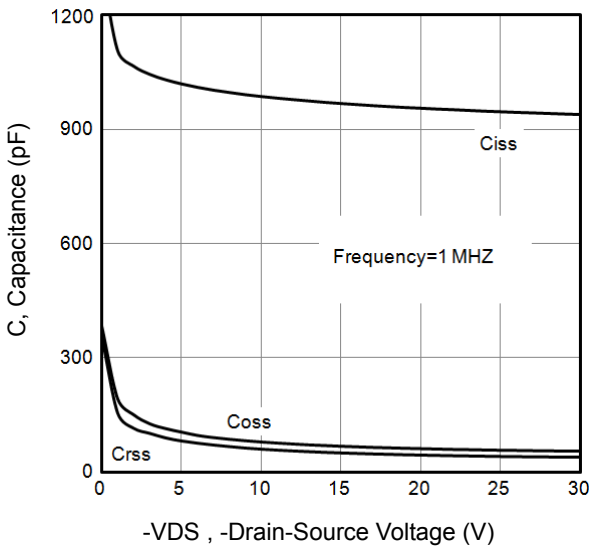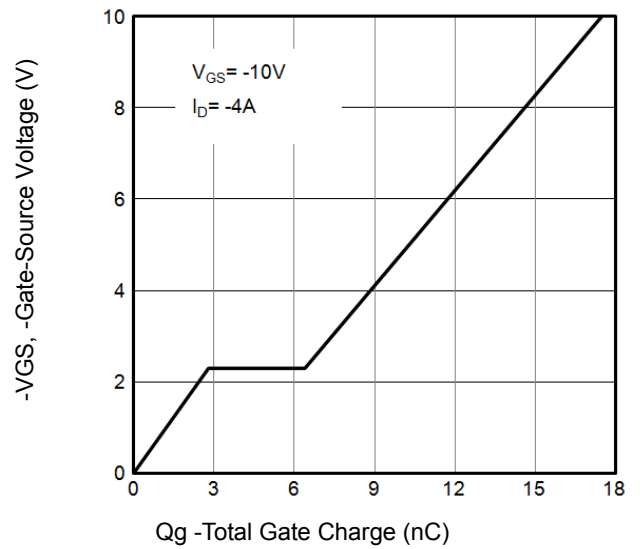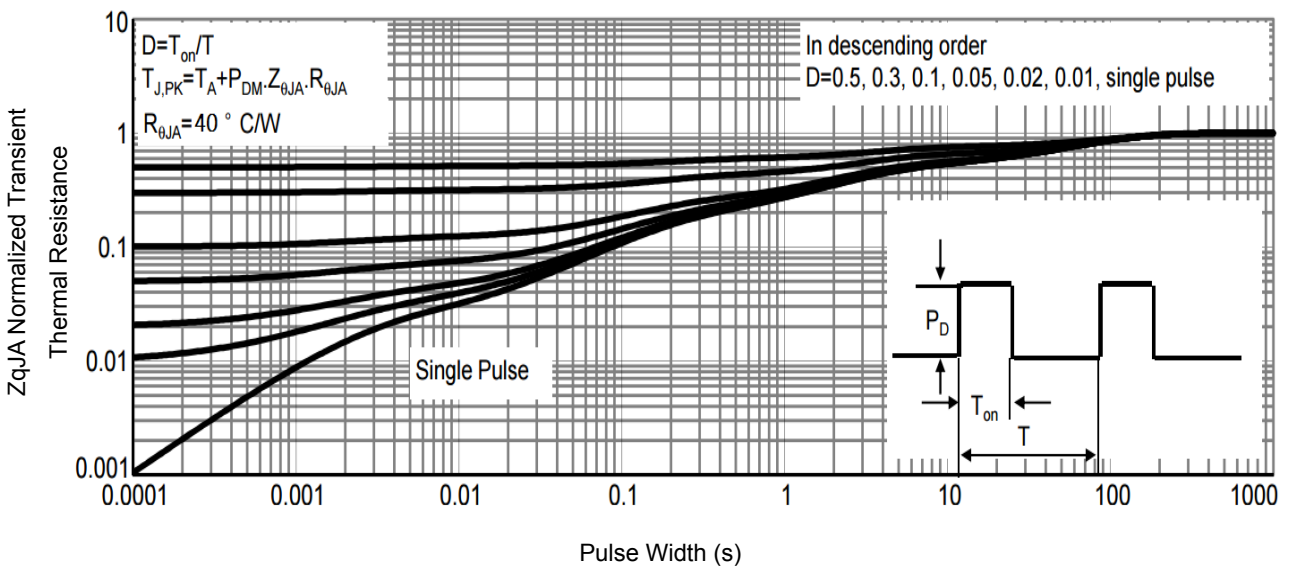
Note ③: Surface Mounted on 1in² FR-4 board with 1oz.

P-Channel Enhancement Mode MOSFET

Electrical Characteristics (T$_J$=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=-250uA	-60	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=-60V, V$_{GS}$=0V	---	---	-1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=-250uA	-1.0	---	-3.0	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0V	---	---	±100	nA
R$_{DS(ON)}$	Drain-Source On-state Resistance	V$_{GS}$=-10V, I$_D$=-4A	---	68	90	mΩ
		V$_{GS}$=-4.5V, I$_D$=-2A	---	80	100	mΩ
Dynamic Characteristics[⑤]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=-30V, Freq.=1MHz	---	940	---	pF
C$_{oss}$	Output Capacitance		---	55	---	
C$_{rss}$	Reverse Transfer Capacitance		---	40	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{DD}$=-30V ,I$_D$=-4A, V$_{GS}$=-10V, R$_G$=6.8Ω	---	9	---	nS
T$_r$	Turn-on Rise Time		---	4	---	
T$_{d(off)}$	Turn-off Delay Time		---	33	---	
T$_f$	Turn-off Fall Time		---	8	---	
Q$_g$	Total Gate Charge	V$_{DS}$=-30V , V$_{GS}$=-10V, I$_D$=-4A	---	17.5	---	nC
Q$_{gs}$	Gate-Source Charge		---	2.8	---	
Q$_{gd}$	Gate-Drain Charge		---	3.6	---	
Source-Drain Characteristics （T$_J$=25℃）						
V$_{SD}$	Diode Forward Voltage2	V$_{GS}$=0V , I$_S$=-4A ,T$_J$=25℃	---	-0.85	-1.2	V
t$_{rr}$	Reverse Recovery Time	I$_S$=-4A, di/dt=100A/μs， T$_J$=25℃	---	32	---	nS
Q$_{rr}$	Reverse Recovery Charge		---	39	---	nC

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤：Guaranteed by design, not subject to production testing.

P-Channel Enhancement Mode MOSFET

Typical Characteristics

Fig1. Typical Output Characteristics

Fig2. $V_{GS(TH)}$ Gate -Source Voltage Vs.Tj

Fig3. Typical Transfer Characteristics

Fig4. Normalized On-Resistance Vs. Tj

Fig5. Typical Source-Drain Diode Forward Voltage

Fig6. Maximum Safe Operating Area

P-Channel Enhancement Mode MOSFET

Fig7. Typical Capacitance Vs.Drain-Source Voltage

Fig8. Typical Gate Charge Vs.Gate-Source Voltage

Fig9. Normalized Maximum Transient Thermal Impedance

P-Channel Enhancement Mode MOSFET

SOP-8 Package Outline Dimensions

Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	**Typ**	**Max**		**Min**	**Typ**	**Max**
A	1.35	1.55	1.75	**A$_1$**	0.10	0.18	0.25
A$_2$	1.25	1.45	1.65	**A$_3$**	--	0.25	--
b$_p$	0.36	0.42	0.51	**c**	0.19	0.22	0.25
D	4.70	4.92	5.10	**E**	3.80	3.90	4.00
e	--	1.27	--	**H$_E$**	5.80	6.00	6.20
L	--	1.05	--	**L$_P$**	0.40	0.68	1.00
Q	0.60	0.65	0.73	**v**	--	0.25	--
w	--	0.25	--	**y**	--	0.10	--
Z	0.30	0.50	0.70	**θ**	0°		8°