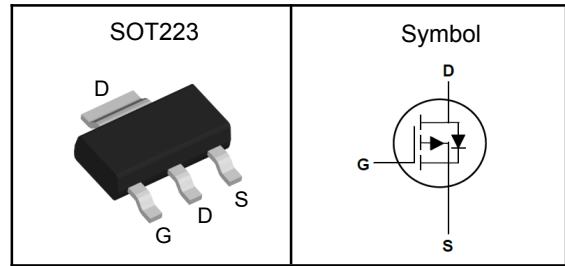


P-Channel Enhancement Mode MOSFET
Features

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant
- 100% UIS and Rg Tested

Applications

- Motor drivers
- DC - DC Converter

Pin Description


V_{DSS}	-60	V
$R_{DS(ON)-Typ}$	25	m Ω
I_D	-7	A

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	-60	V
V_{GSS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$I_{DM}^{①}$	Pulse Drain Current Tested	-50	A
I_D	Continuous Drain Current	$T_A=25^\circ\text{C}$	A
I_D	Continuous Drain Current	$T_A=70^\circ\text{C}$	A
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	W
E_{AS}	Avalanche Energy, Single pulse	60	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	20	$^\circ\text{C}/\text{W}$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C .

Note ③ : Surface Mounted on 1in^2 FR-4 board with 1oz.



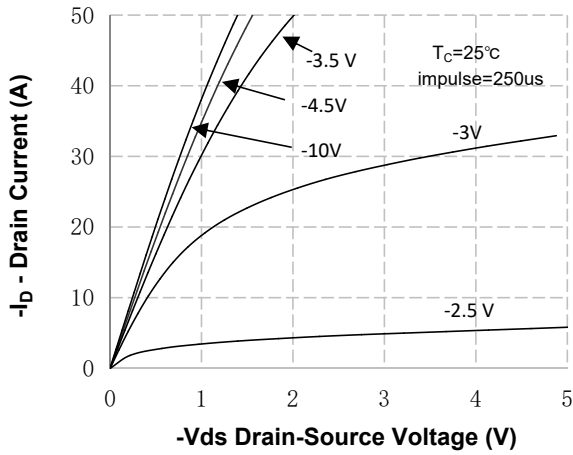
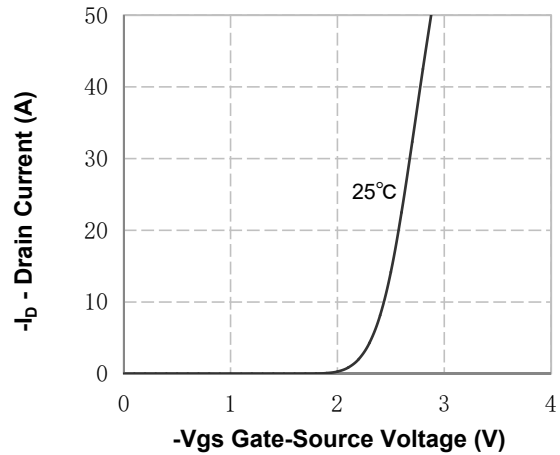
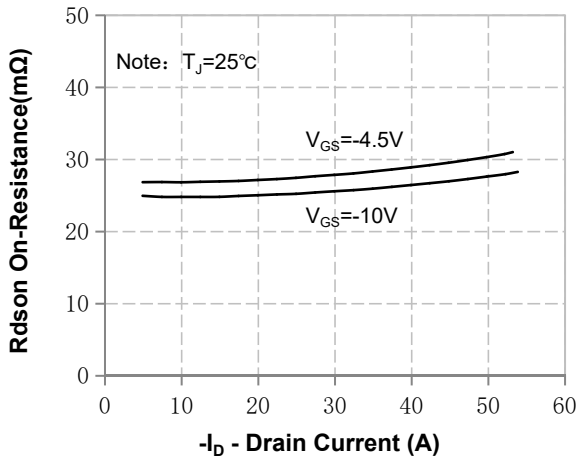
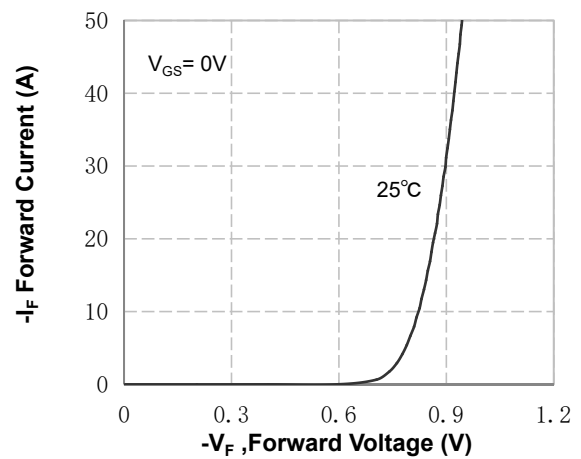
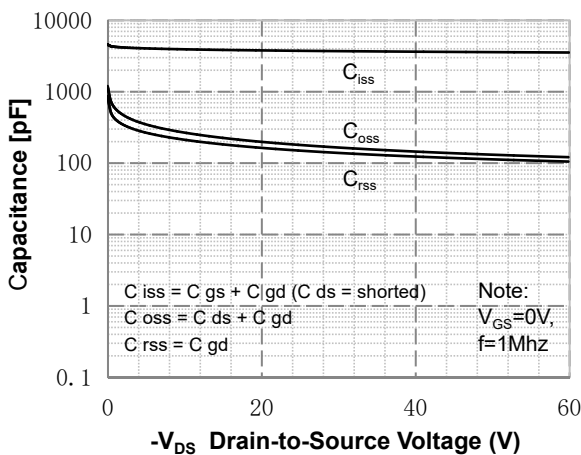
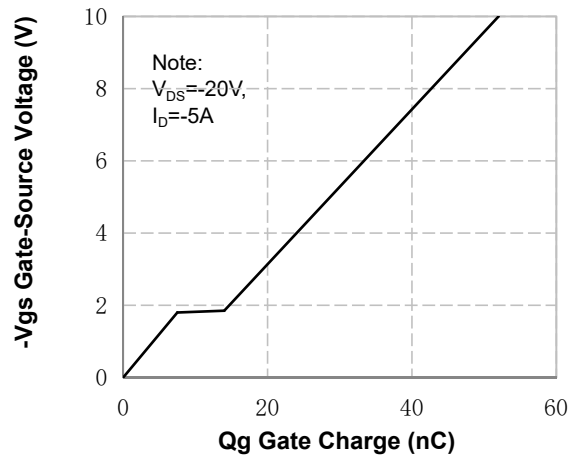
P-Channel Enhancement Mode MOSFET

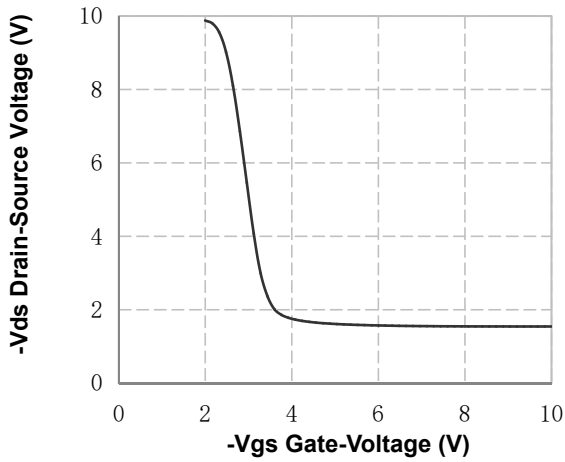
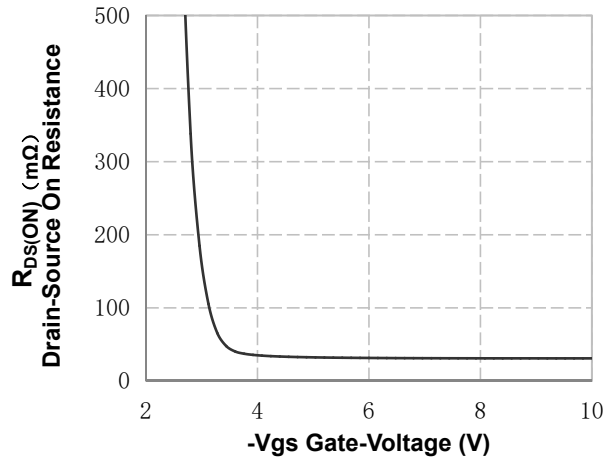
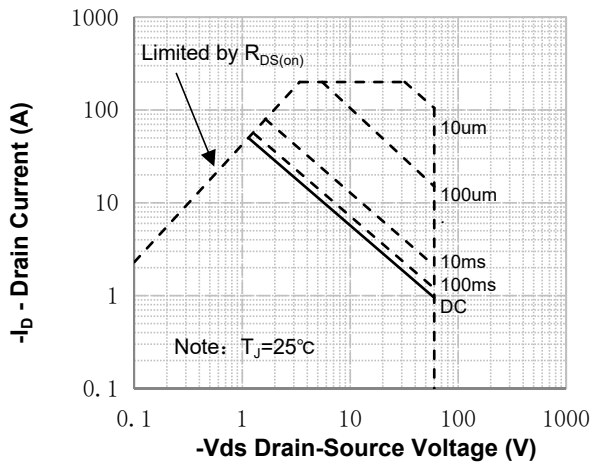
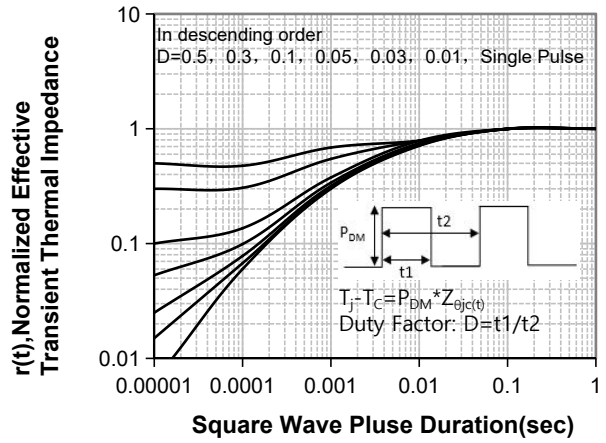
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

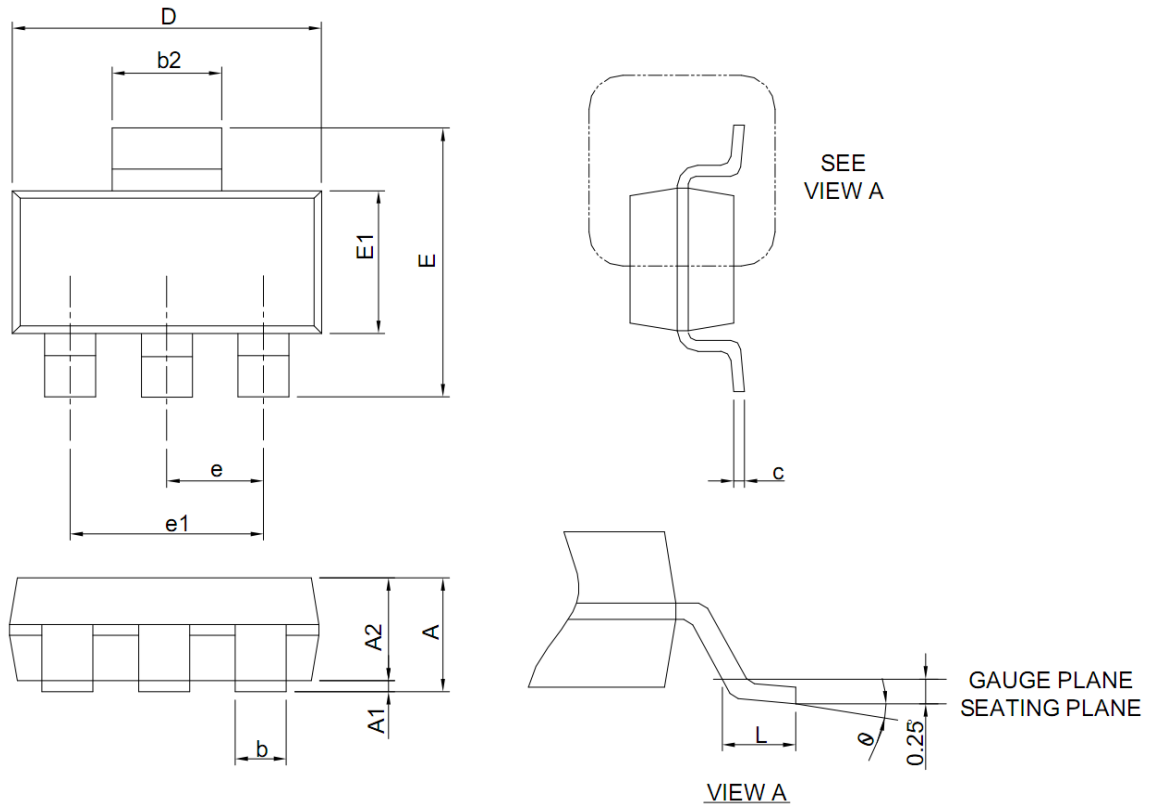
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$	---	---	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	---	-2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=-10V, I_D=-5A$	---	25	30	m Ω
		$V_{GS}=-4.5V, I_D=-3A$	---	29	38	m Ω
Dynamic Characteristics ^⑤						
R_g	Gate Resistance	$f=1\text{MHz}$	---	6	---	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-20V, \text{Freq.}=1\text{MHz}$	---	3580	---	pF
C_{oss}	Output Capacitance		---	195	---	
C_{rss}	Reverse Transfer Capacitance		---	160	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=-10V, V_{DS}=-15V, I_D=-1A, R_G=3.3\Omega$	---	39	---	nS
T_r	Turn-on Rise Time		---	24	---	
$T_{d(off)}$	Turn-off Delay Time		---	102	---	
T_f	Turn-off Fall Time		---	7	---	
Q_g	Total Gate Charge	$V_{GS}=-10V, V_{DS}=-20V, I_D=-5A$	---	52	---	nC
Q_{gs}	Gate-Source Charge		---	7.4	---	
Q_{gd}	Gate-Drain Charge		---	6.5	---	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	$I_S=-1A, V_{GS}=0V$	---	---	-1.2	V
I_S	Maximum Continuous Drain-Source Diode Forward Current		---	---	-7	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		---	---	-50	A

Note ④: Pulse test (pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$).

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

P-Channel Enhancement Mode MOSFET
Typical Characteristics

Figure 1. On-Region Characteristics

Figure 2. Transfer Characteristics

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

Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

Figure 5. Capacitance Characteristics

Figure 6. Gate Charge Characteristics

P-Channel Enhancement Mode MOSFET

Figure 7. Vds Drain-Source Voltage vs Gate Voltage

Figure 8. On-Resistance vs Gate Voltage

Figure 9. Maximum Safe Operating Area

Figure 11. Transient Thermal Response Curve

P-Channel Enhancement Mode MOSFET
SOT223 Package Outline Data


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.50	1.65	1.80	A1	0.02	0.06	0.10
A2	1.50	1.60	1.70	b	0.66	0.72	0.80
b2	2.90	3.00	3.10	c	0.23	0.30	0.35
D	6.30	6.50	6.70	E	6.70	7.00	7.30
E1	3.30	3.50	3.70	e	2.30 REF		
e1	4.60 REF			L	0.75	--	1.15
θ	0°	--	10°				