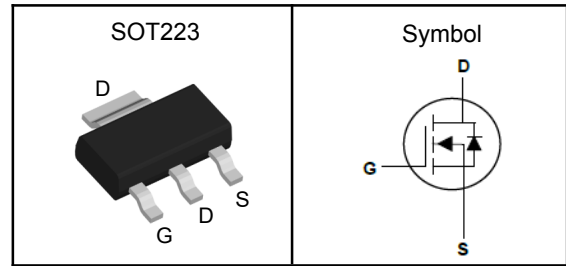


**N-Channel Enhancement Mode MOSFET**
**Features**

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

**Applications**

- Power Management in Desktop Computer
- DC/DC Converters

**Pin Description**


$V_{DSS}$	100	V
$R_{DS(ON)-Typ}$	90	m $\Omega$
$I_D$	2.5	A

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

Symbol	Parameter	N-Channel	Unit
$V_{DSS}$	Drain-Source Voltage	100	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	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	10	A
$I_D$	Continuous Drain Current	$T_A=25^\circ\text{C}$	A
$P_D$	Maximum Power Dissipation	$T_A=25^\circ\text{C}$	W

**Thermal Characteristics**

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sub>1</sub> (Max)	85	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sub>1</sub>	30	$^\circ\text{C}/\text{W}$

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

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^\circ\text{C}$ .

Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.



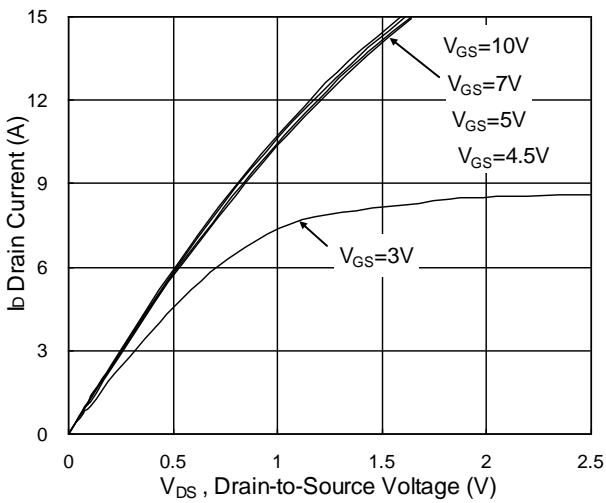
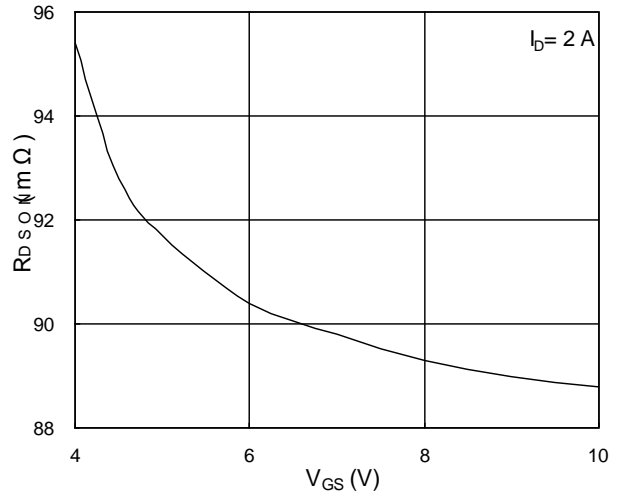
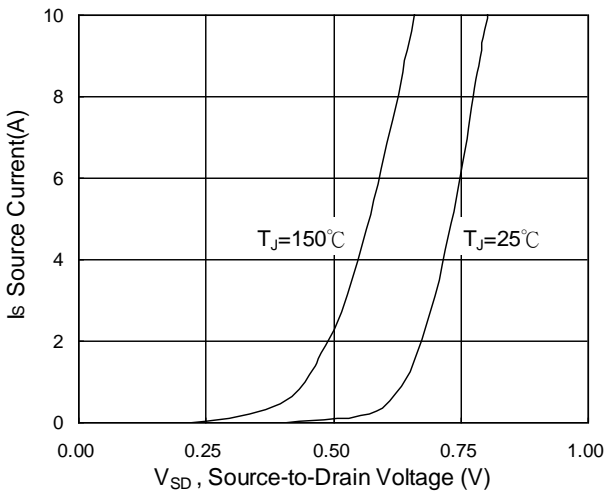
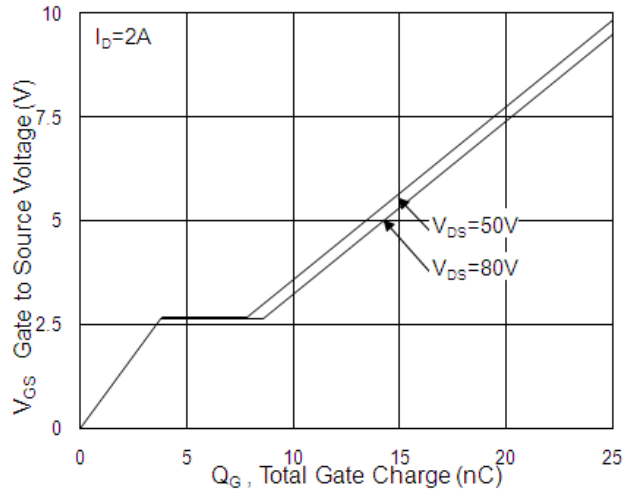
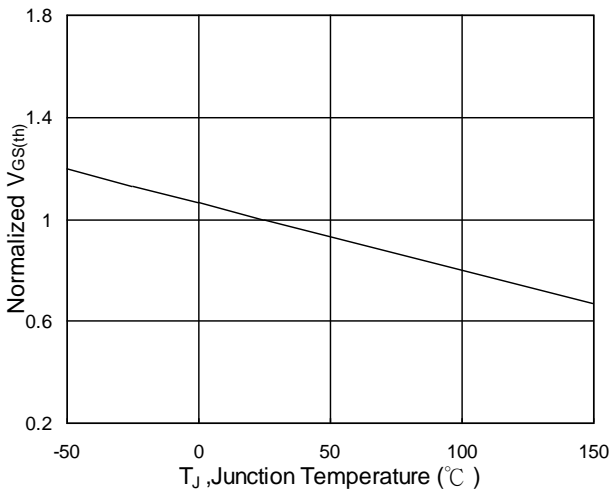
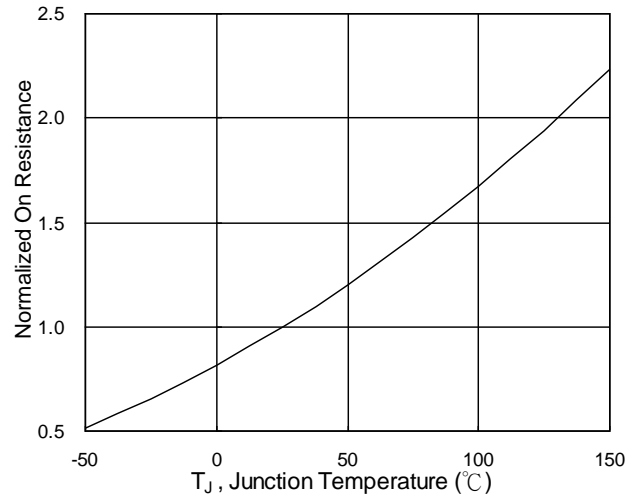
**N-Channel Enhancement Mode MOSFET**

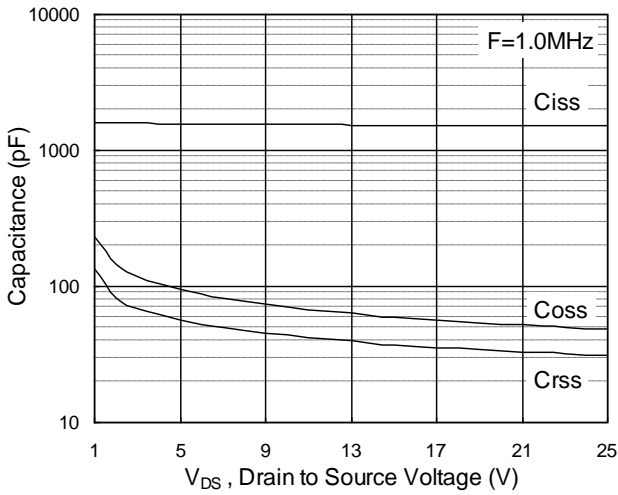
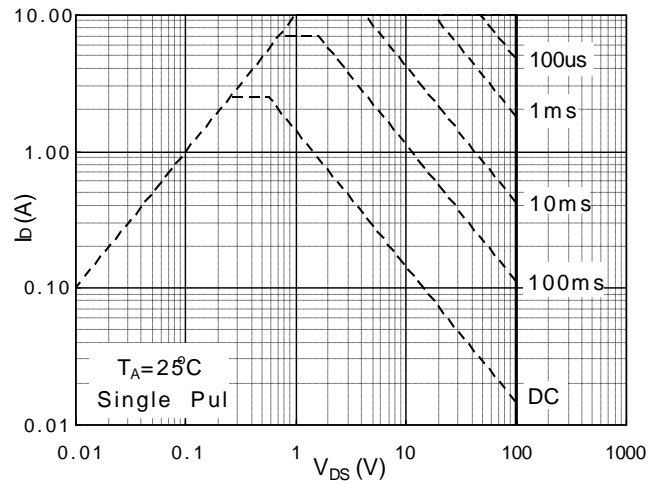
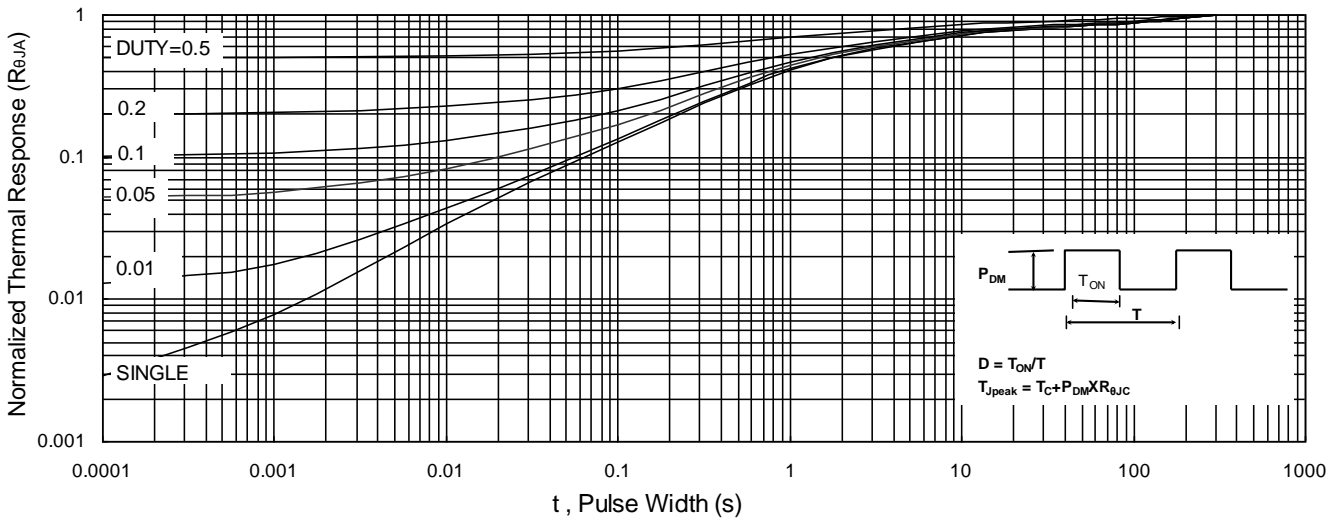
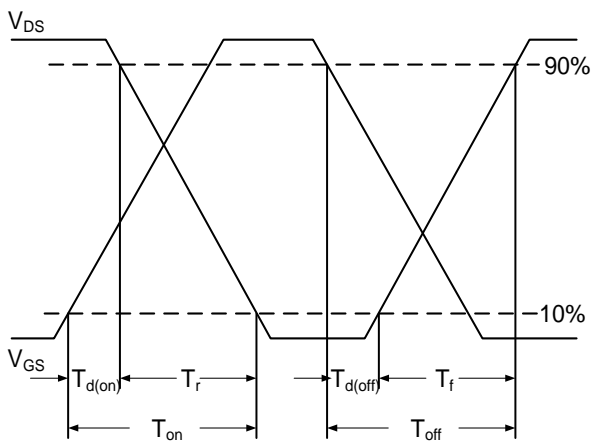
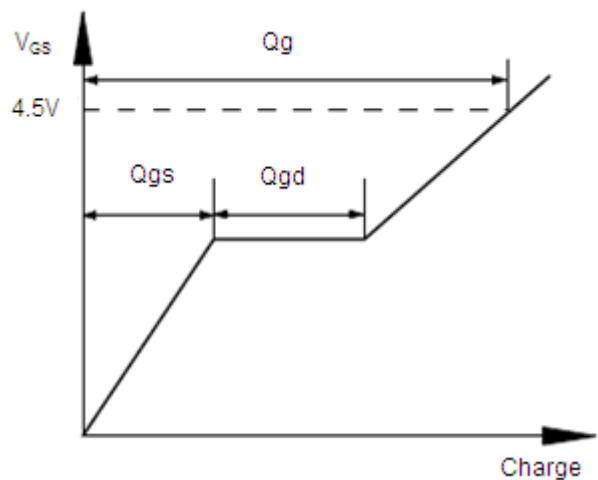
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$ , Unless Otherwise Noted)

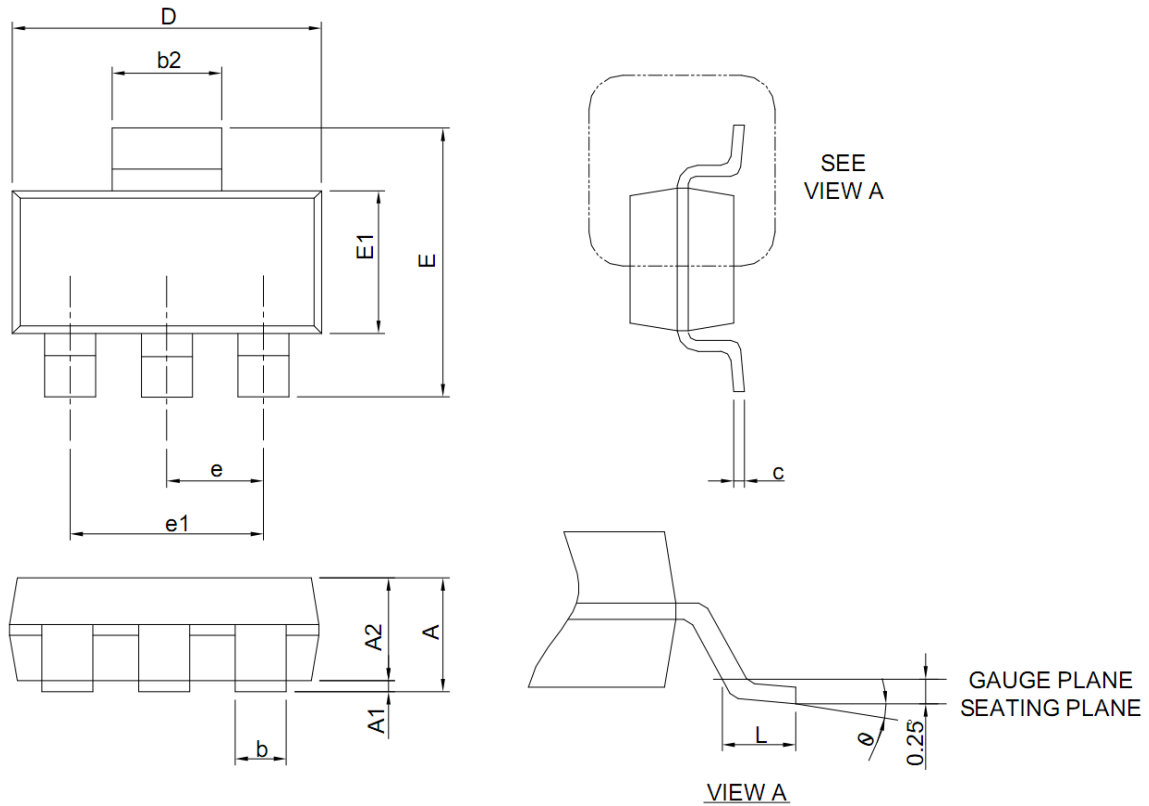
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=80V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	---	2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=2A$	---	90	112	m $\Omega$
		$V_{GS}=4.5V, I_D=1A$	---	95	120	
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=15V, \text{Freq.}=1\text{MHz}$	---	1535	---	pF
$C_{oss}$	Output Capacitance		---	60	---	
$C_{rss}$	Reverse Transfer Capacitance		---	37	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=2A$	---	4.2	---	nS
$T_r$	Turn-on Rise Time		---	7.6	---	
$T_{d(off)}$	Turn-off Delay Time		---	41	---	
$T_f$	Turn-off Fall Time		---	14	---	
$Q_g$	Total Gate Charge	$V_{DD}=80V, V_{GS}=10V, I_D=2A$	---	26.2	---	nC
$Q_{gs}$	Gate-Source Charge		---	3.8	---	
$Q_{gd}$	Gate-Drain Charge		---	4.8	---	
<b>Source-Drain Characteristics</b> ( $T_J=25^{\circ}\text{C}$ )						
$V_{SD}$	Diode Forward Voltage <sub>z</sub>	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_F=2A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	35	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	17	---	nC

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

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

**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**

**Fig.1 Typical Output Characteristics**

**Fig.2 On-Resistance vs. Gate-Source**

**Fig.3 Forward Characteristics of Reverse**

**Fig.4 Gate-Charge Characteristics**

**Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$** 

**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**

**N-Channel Enhancement Mode MOSFET**

**Fig.7 Capacitance**

**Fig.8 Safe Operating Area**

**Fig.9 Normalized Maximum Transient Thermal Impedance**

**Fig.10 Switching Time Waveform**

**Fig.11 Gate Charge Waveform**

**N-Channel Enhancement Mode MOSFET**
**SOT223 Package Outline Data**


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