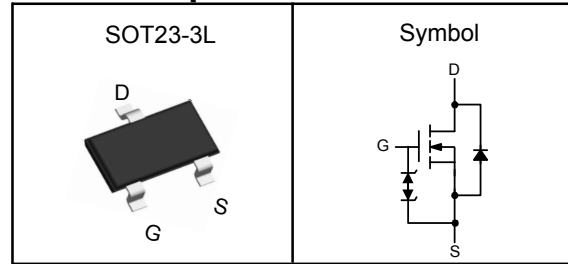


## N-Channel Enhancement Mode MOSFET

### Features

- Low R<sub>dson</sub> for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

### Pin Description



### Applications

- Power Management in Desktop Computer
- DC/DC Converters

V <sub>DSS</sub>	20	V
R <sub>DS(ON)-Typ</sub>	15	mΩ
I <sub>D</sub>	6	A

### Absolute Maximum Ratings (T<sub>A</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V <sub>DSS</sub>	Drain-Source Voltage	20	V
V <sub>GSS</sub>	Gate-Source Voltage	±12	V
T <sub>J</sub>	Maximum Junction Temperature	-55 to 150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
I <sub>DM</sub> <sup>①</sup>	Pulse Drain Current Tested	20	A
I <sub>D</sub>	Continuous Drain Current	6	A
P <sub>D</sub>	Maximum Power Dissipation	1.4	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	110	°C/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<sup>2</sup> FR-4 board with 1oz.



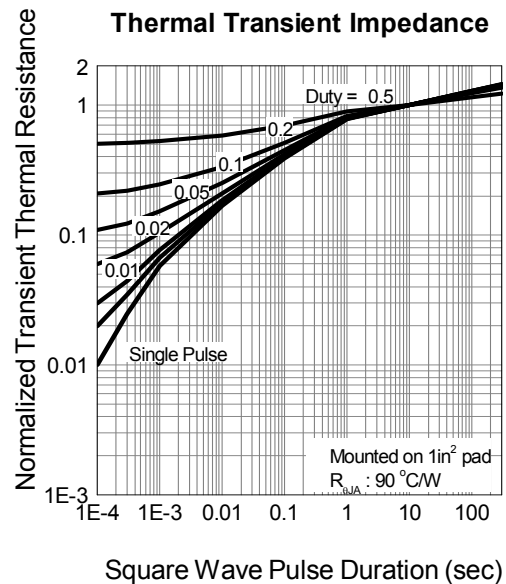
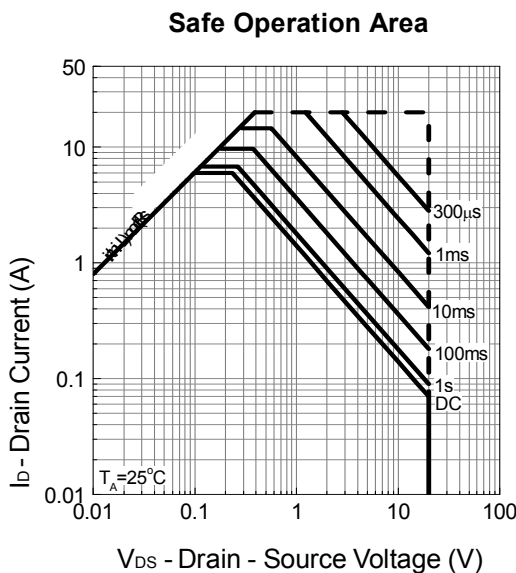
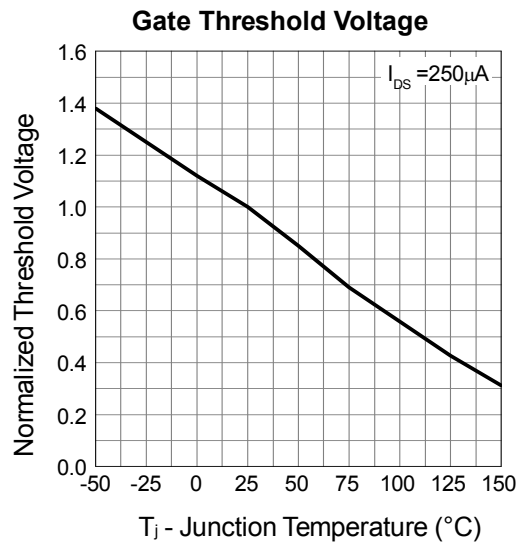
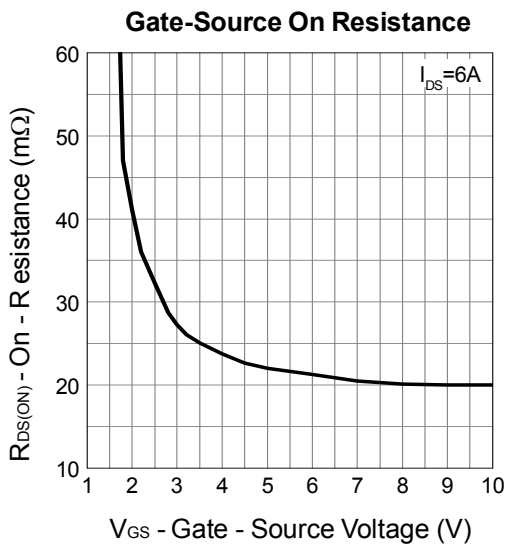
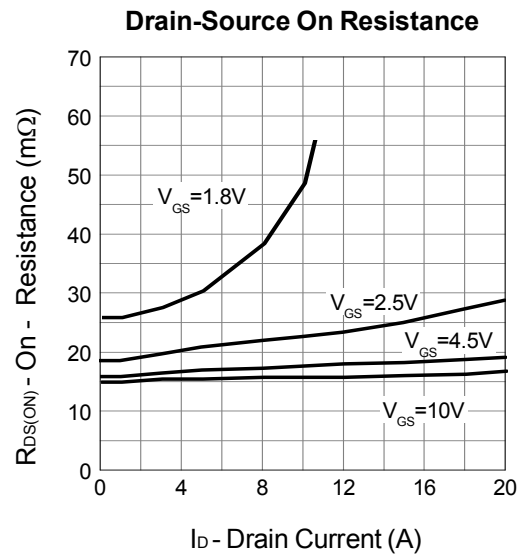
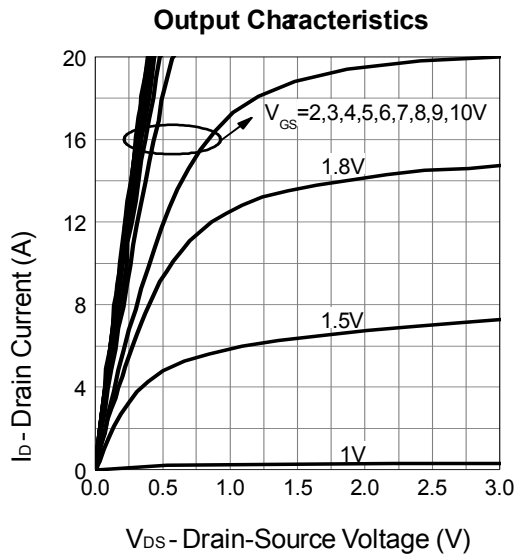
**N-Channel Enhancement Mode MOSFET**

**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	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	---	1	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	$\pm 10$	$\mu A$
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=6A$	---	15	20	$m\Omega$
		$V_{GS}=4.5V, I_D=6A$	---	16	22	$m\Omega$
<b>Dynamic Characteristics<sup>⑤</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=10V, \text{Freq.}=1\text{MHz}$	---	460	---	pF
$C_{oss}$	Output Capacitance		---	115	---	
$C_{rss}$	Reverse Transfer Capacitance		---	105	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=10V, R_L=10\Omega, I_{DS}=1A, V_{GEN}=4.5V, R_G=6\Omega$	---	4	---	nS
$T_r$	Turn-on Rise Time		---	14	---	
$T_{d(off)}$	Turn-off Delay Time		---	26	---	
$T_f$	Turn-off Fall Time		---	7.6	---	
$Q_g$	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V, I_D=6A$	---	8.6	---	nC
$Q_{gs}$	Gate-Source Charge		---	0.7	---	
$Q_{gd}$	Gate-Drain Charge		---	3.2	---	
<b>Source-Drain Characteristics (<math>T_J=25^{\circ}\text{C}</math>)</b>						
$V_{SD}^{④}$	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	---	0.7	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=6A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	18	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	5.5	---	nC

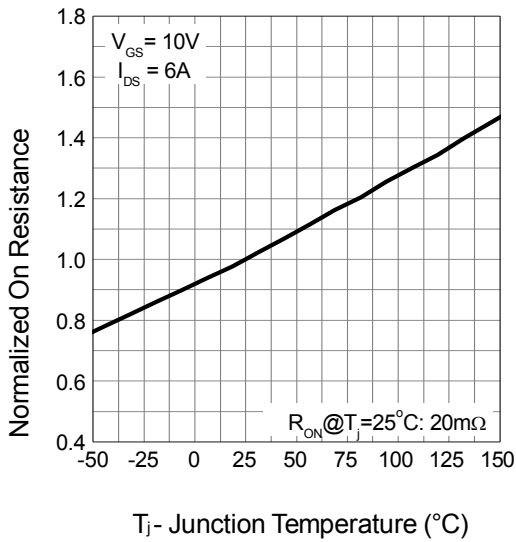
Note ④: Pulse test (pulse width 300us, duty cycle 2%).

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

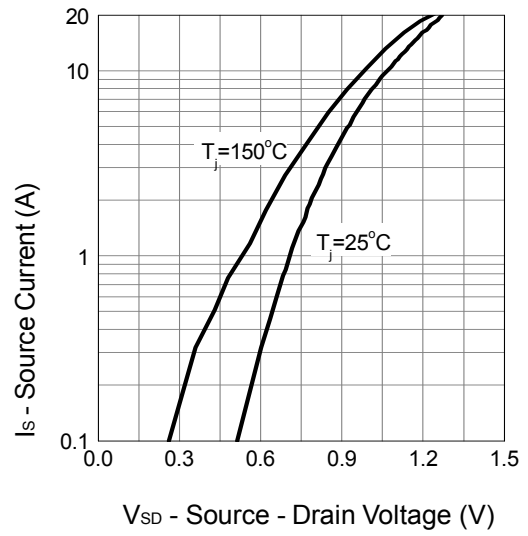
**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**


**N-Channel Enhancement Mode MOSFET**

**Drain-Source On Resistance**



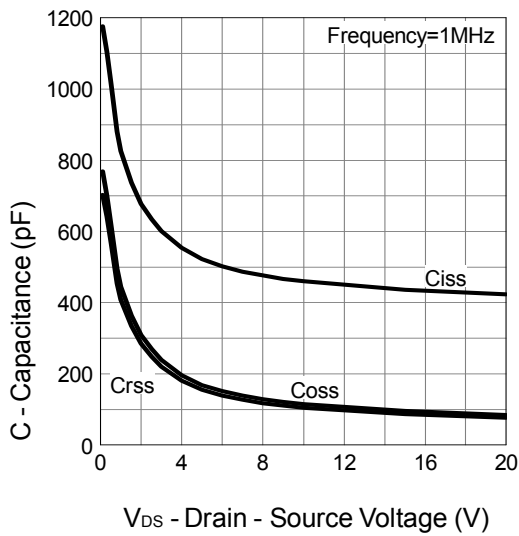
**Source-Drain Diode Forward**



T<sub>j</sub>- Junction Temperature (°C)

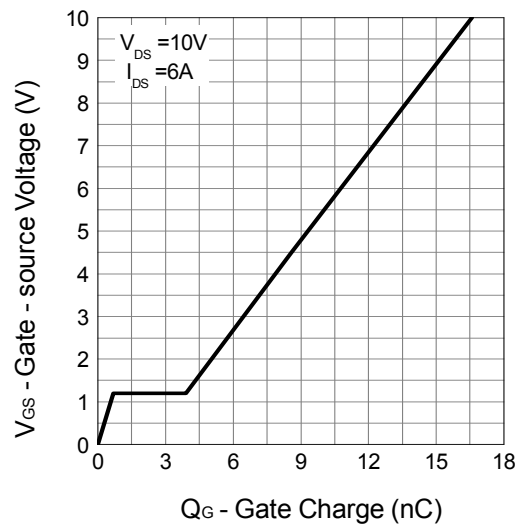
V<sub>SD</sub> - Source - Drain Voltage (V)

**Capacitance**



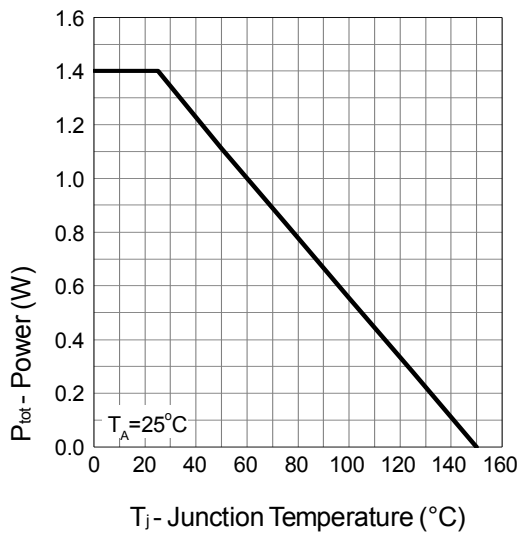
V<sub>DS</sub> - Drain - Source Voltage (V)

**Gate Charge**



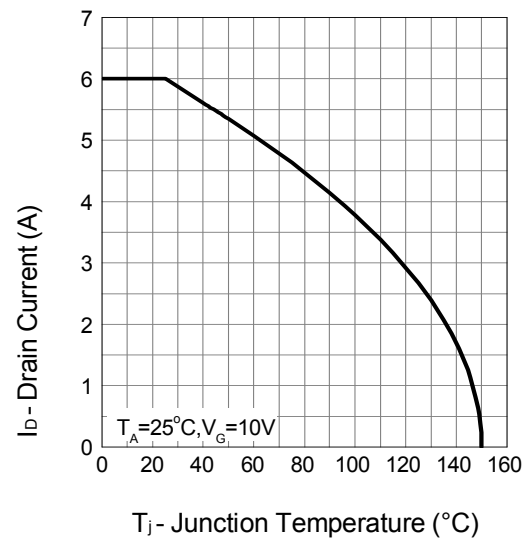
Q<sub>G</sub> - Gate Charge (nC)

**Power Dissipation**

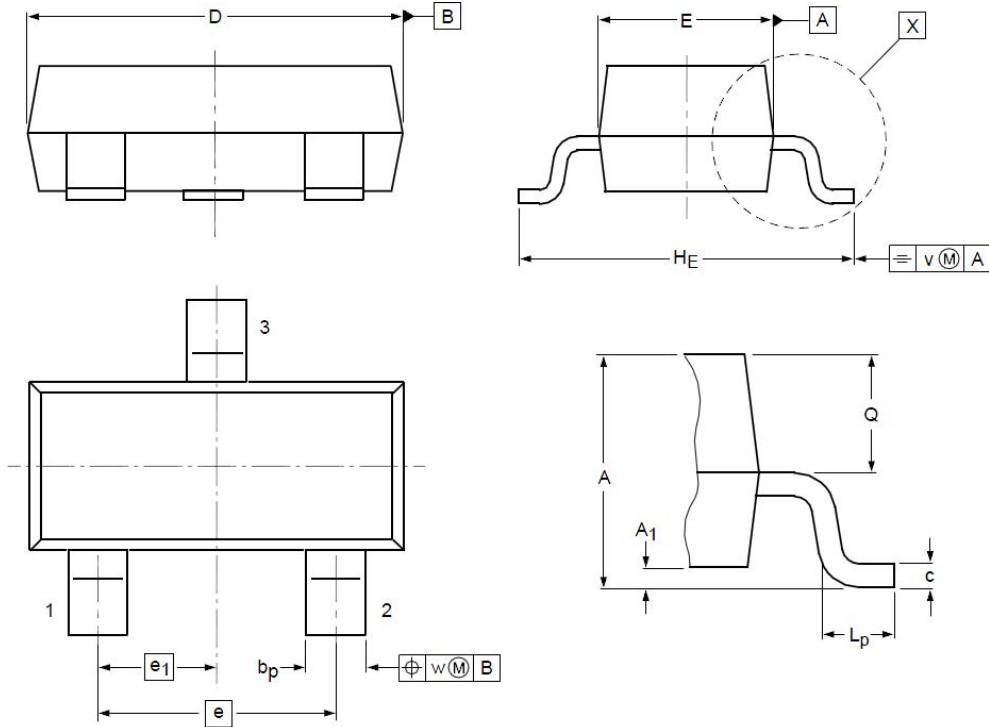


T<sub>j</sub>- Junction Temperature (°C)

**Drain Current**



T<sub>j</sub>- Junction Temperature (°C)

**N-Channel Enhancement Mode MOSFET**
**SOT23-3L Package Outline Dimensions**


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.90	1.07	1.25	<b><math>e_1</math></b>	--	0.95	--
<b><math>A_1</math></b>	0.01	0.05	0.10	<b><math>H_E</math></b>	2.50	2.80	3.00
<b><math>b_p</math></b>	0.30	0.40	0.50	<b><math>L_P</math></b>	0.30	0.45	0.60
<b>c</b>	0.10	0.15	0.20	<b>Q</b>	0.23	0.28	0.33
<b>D</b>	2.70	2.90	3.10	<b>V</b>	--	0.20	--
<b>E</b>	1.40	1.55	1.75	<b>W</b>	--	0.20	--
<b>e</b>	--	1.90	--				