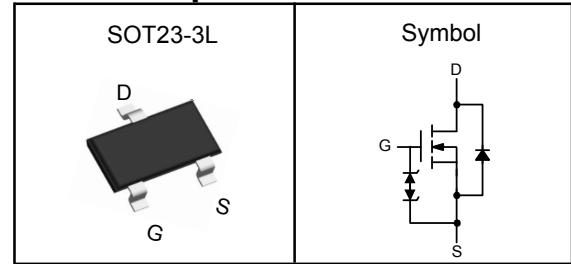


## N-Channel Enhancement Mode MOSFET

### Features

- Low  $R_{ds(on)}$  for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

### Pin Description



### Applications

- Power Management in Desktop Computer
- DC/DC Converters

$V_{DSS}$	100	V
$R_{DS(ON)-Typ}$	220	m $\Omega$
$I_D$	3	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	3	A
$P_D$	Maximum Power Dissipation	1.25	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C/W}$

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

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

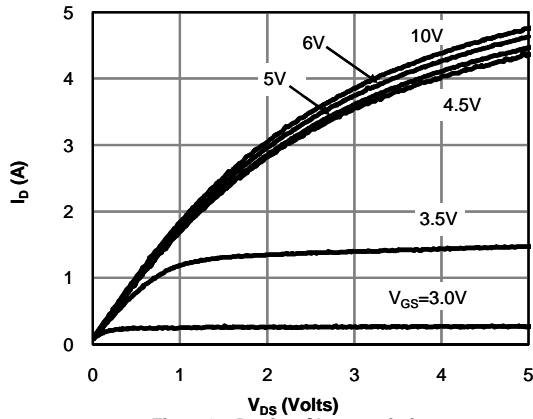
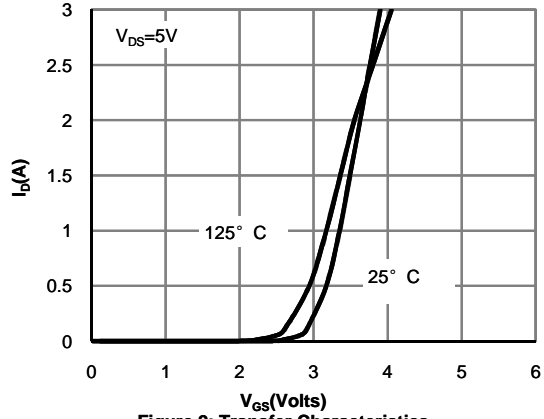
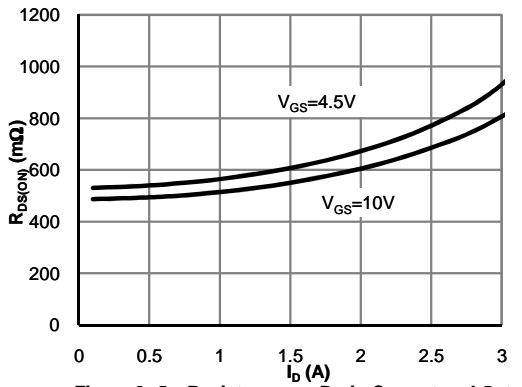
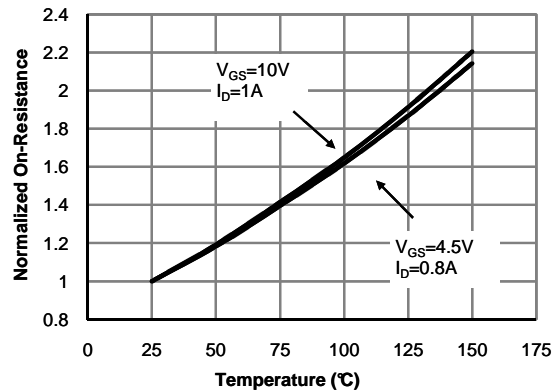
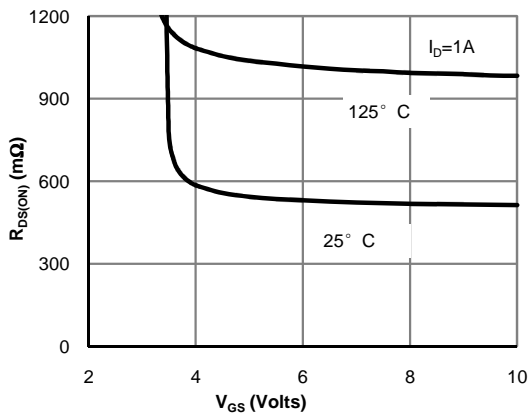
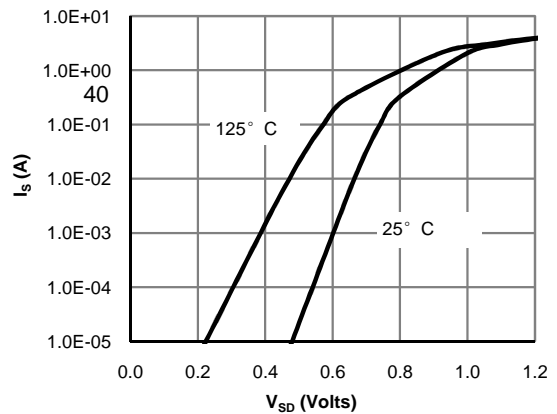
Note ③ : Surface Mounted on  $1\text{in}^2$  FR-4 board with 1oz.

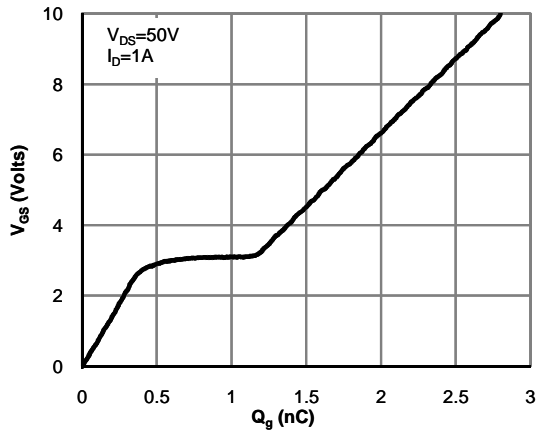
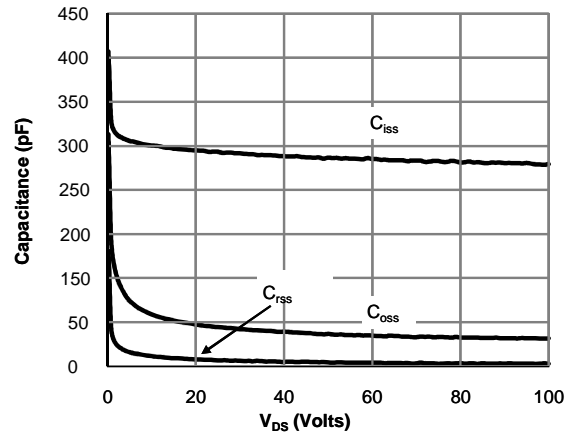
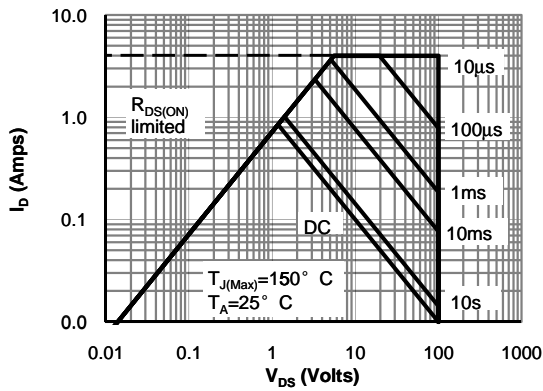
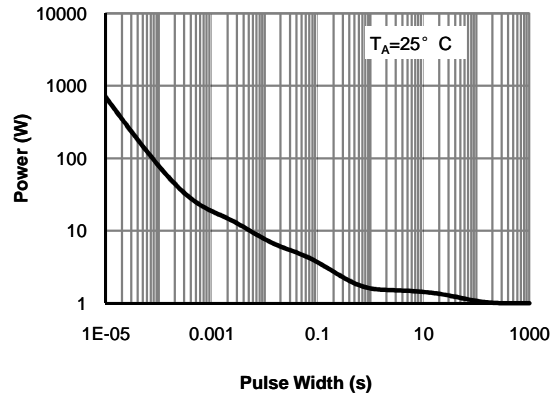
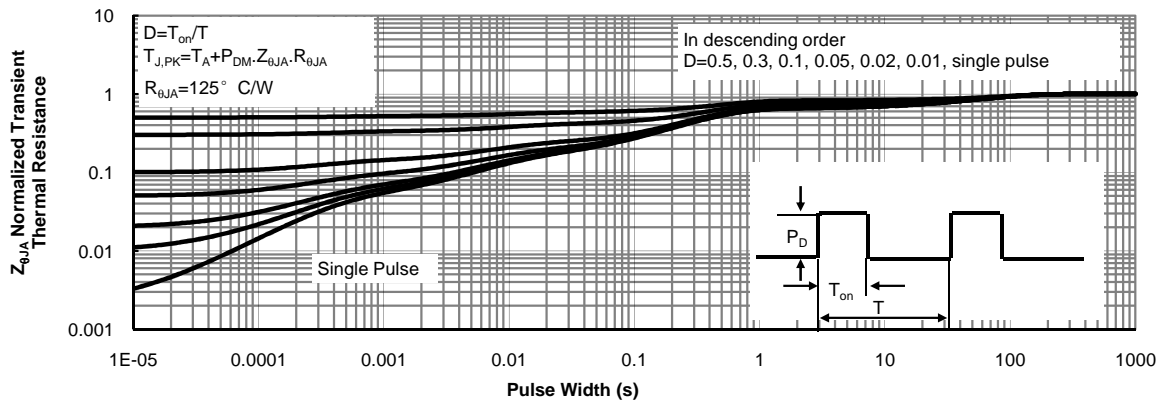
**N-Channel Enhancement Mode MOSFET****Electrical Characteristics** ( $T_J=25^\circ\text{C}$ , Unless Otherwise Noted)

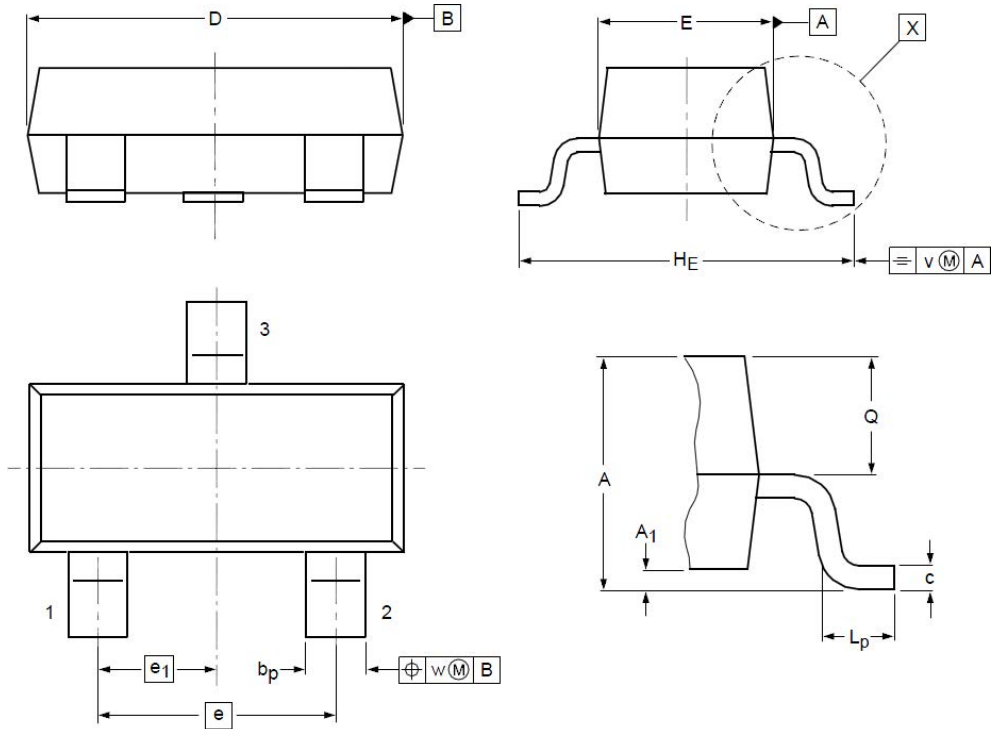
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=80V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	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	$V_{GS}=10V, I_D=3A$	---	220	350	$m\Omega$
		$V_{GS}=4.5V, I_D=2.5A$	---	280	400	$m\Omega$
gfs	Forward Transconductance	$V_{DS}=5V, I_D=1A$	---	10	---	S
<b>Dynamic Characteristics<sup>⑤</sup></b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=50V,$ Freq.=1MHz	---	295	---	pF
$C_{oss}$	Output Capacitance		---	40	---	
$C_{rss}$	Reverse Transfer Capacitance		---	15	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=50V, R_L=10\Omega,$ $I_{DS}=1A, V_{GS}=4.5V,$ $R_G=6\Omega$	---	3.6	---	nS
$T_r$	Turn-on Rise Time		---	3.5	---	
$T_{d(off)}$	Turn-off Delay Time		---	32	---	
$T_f$	Turn-off Fall Time		---	3	---	
$Q_g$	Total Gate Charge	$V_{DS}=50V, V_{GS}=4.5V,$ $I_D=1A$	---	2.1	---	nC
$Q_{gs}$	Gate-Source Charge		---	0.6	---	
$Q_{gd}$	Gate-Drain Charge		---	0.8	---	
<b>Source-Drain Characteristics</b> ( $T_J=25^\circ\text{C}$ )						
$V_{SD}^{④}$	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	---	0.8	1.0	V

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**

**Fig 1: On-Region 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**

**N-Channel Enhancement Mode MOSFET**

**Figure 7: Gate-Charge Characteristics**

**Figure 8: Capacitance Characteristics**

**Figure 9: Maximum Forward Biased Safe Operating Area**

**Figure 10: Single Pulse Power Rating Junction-to-Ambient**

**Figure 11: Normalized Maximum Transient Thermal Impedance**

**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>e<sub>1</sub></b>	--	0.95	--
<b>A<sub>1</sub></b>	0.01	0.05	0.10	<b>H<sub>E</sub></b>	2.50	2.80	3.00
<b>b<sub>p</sub></b>	0.30	0.40	0.50	<b>L<sub>P</sub></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	--				