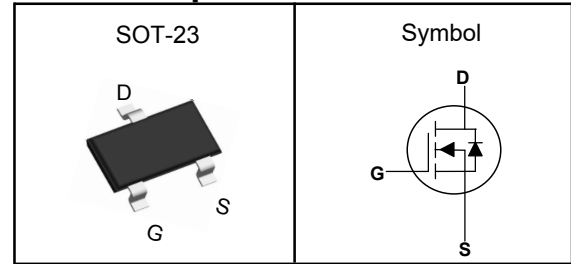


## N-Channel Enhancement Mode MOSFET

### 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>	30	V
R <sub>DS(ON)-Typ</sub>	22	mΩ
I <sub>D</sub>	5.8	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	30	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	30	A
I <sub>D</sub>	Continuous Drain Current	5.8	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	89	°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.



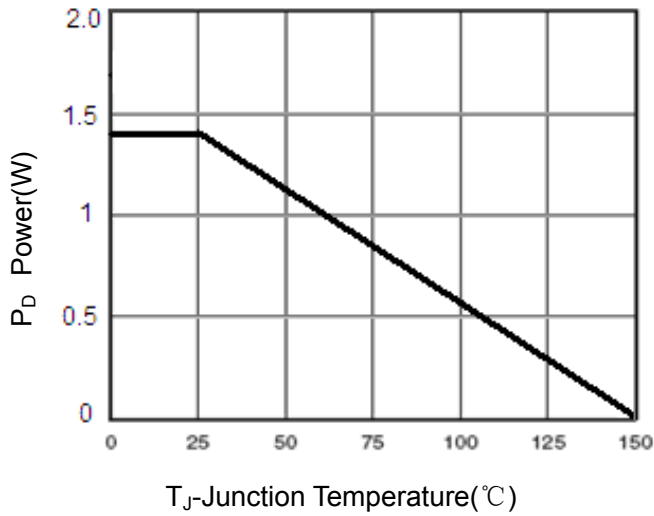
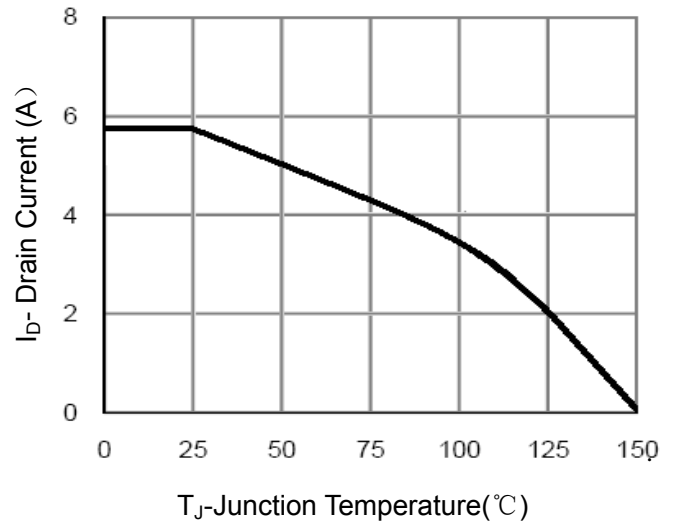
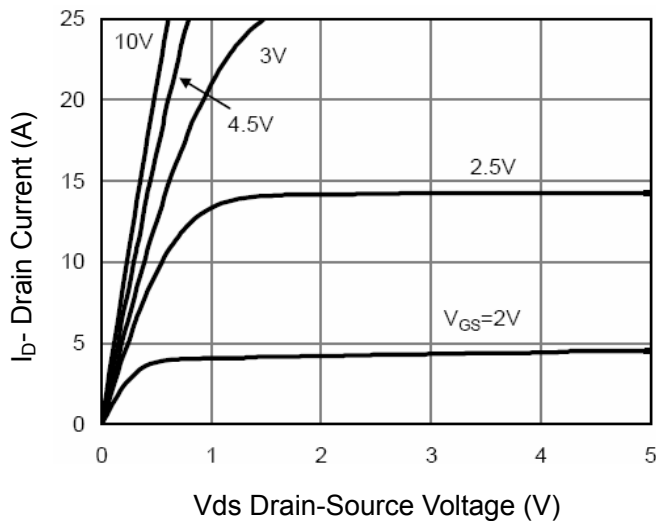
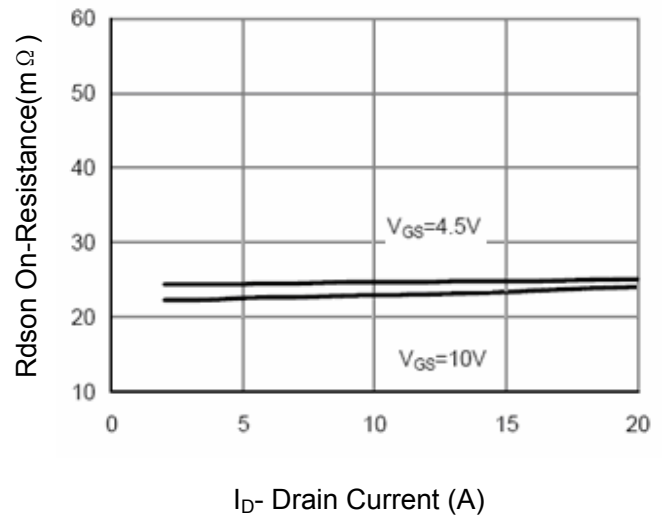
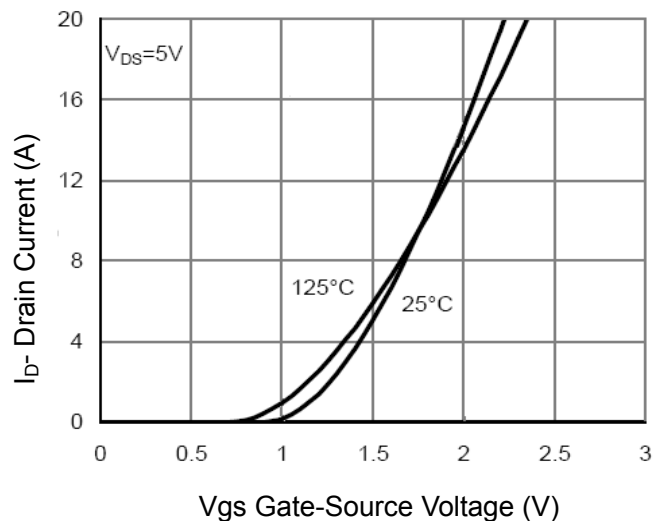
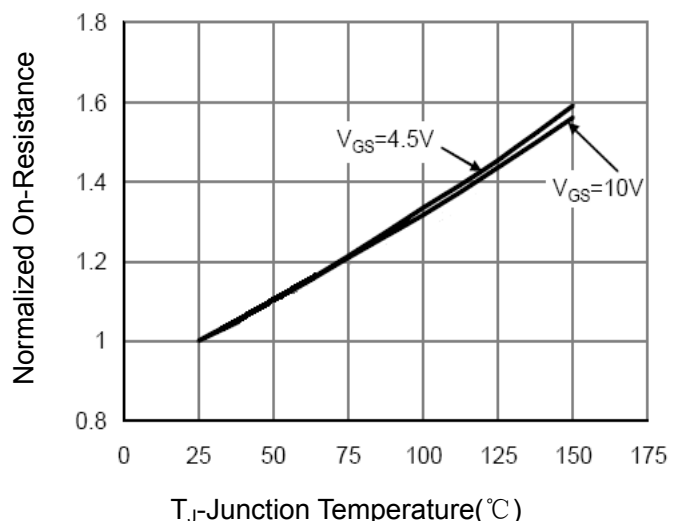
**N-Channel Enhancement Mode MOSFET**

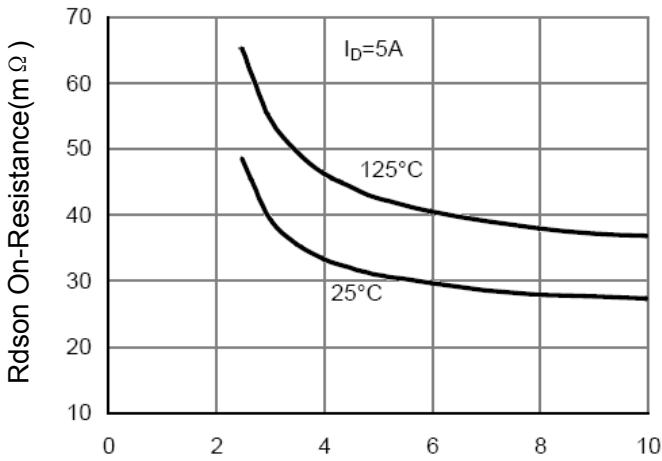
**Electrical Characteristics** (T<sub>J</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	---	---	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	---	---	1	uA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	0.7	---	1.2	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	---	---	±100	nA
R <sub>DS(ON)</sub>	Drain-Source On-state Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =5.8A	---	22	35	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A	---	24	41	mΩ
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, Freq.=1MHz	---	820	---	pF
C <sub>oss</sub>	Output Capacitance		---	99	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	77	---	
T <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, R <sub>G</sub> =3Ω, V <sub>GS</sub> =10V, R <sub>L</sub> =2.7Ω	---	3.3	---	nS
T <sub>r</sub>	Turn-on Rise Time		---	4.8	---	
T <sub>d(off)</sub>	Turn-off Delay Time		---	26	---	
T <sub>f</sub>	Turn-off Fall Time		---	4	---	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =5A	10	---	---	S
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.8A	---	9.5	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	1.5	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	3	---	
<b>Source-Drain Characteristics</b> (T <sub>J</sub> =25°C)						
V <sub>SD</sub> <sup>④</sup>	Diode Forward Voltage	I <sub>S</sub> =5.8A, V <sub>GS</sub> =0V	---	---	1.2	V

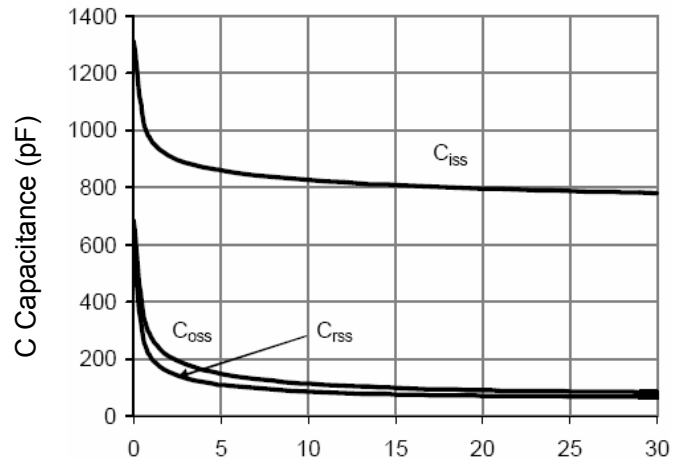
Note ④ : Pulse test (pulse width≤300us, duty cycle≤2%).

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

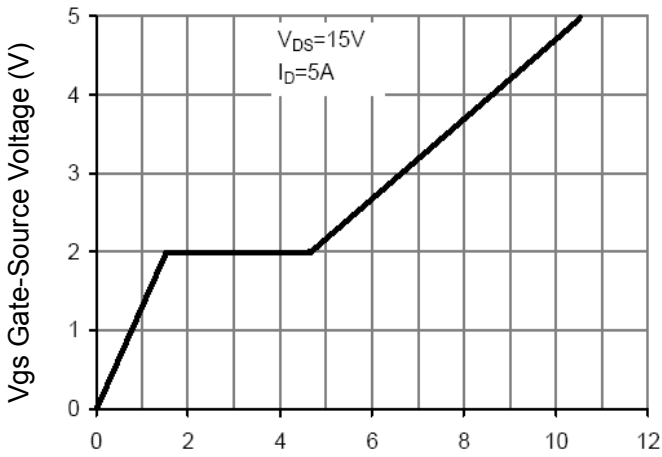
**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**

**Figure 1 Power Dissipation**

**Figure 2 Drain Current**

**Figure 3 Output Characteristics**

**Figure 4 Drain-Source On-Resistance**

**Figure 5 Transfer Characteristics**

**Figure 6 Drain-Source On-Resistance**

**N-Channel Enhancement Mode MOSFET**


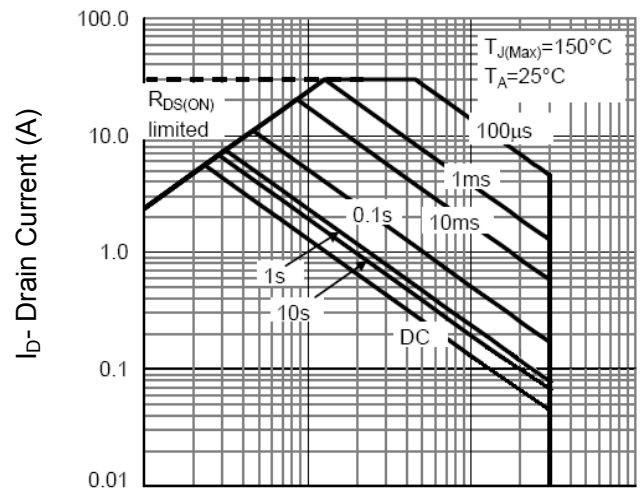
Vgs Gate-Source Voltage (V)  
**Figure 7 Rdson vs Vgs**



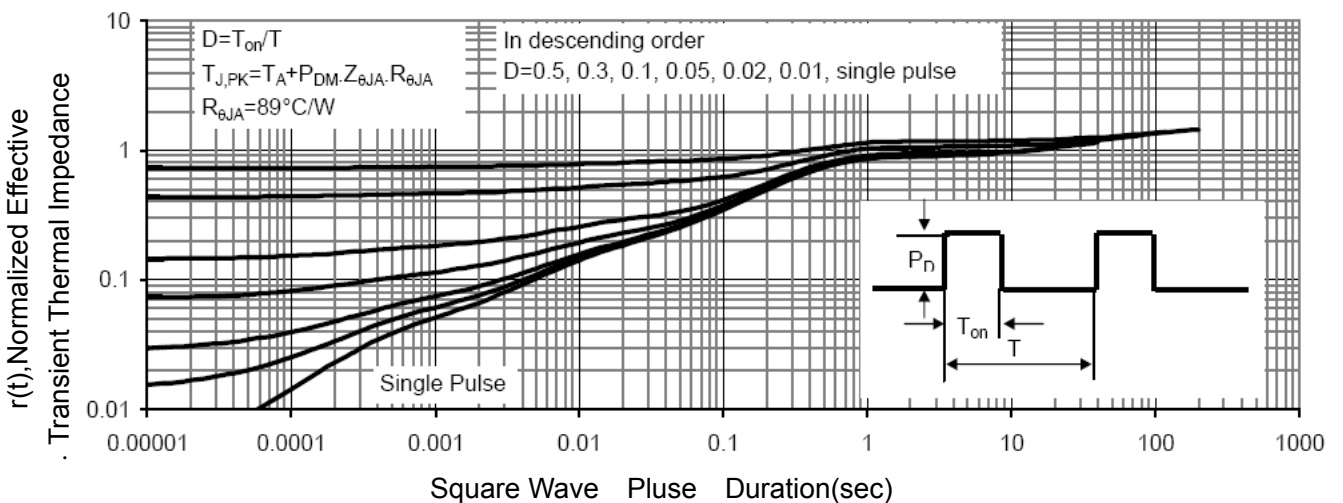
Vds Drain-Source Voltage (V)  
**Figure 8 Capacitance vs Vds**



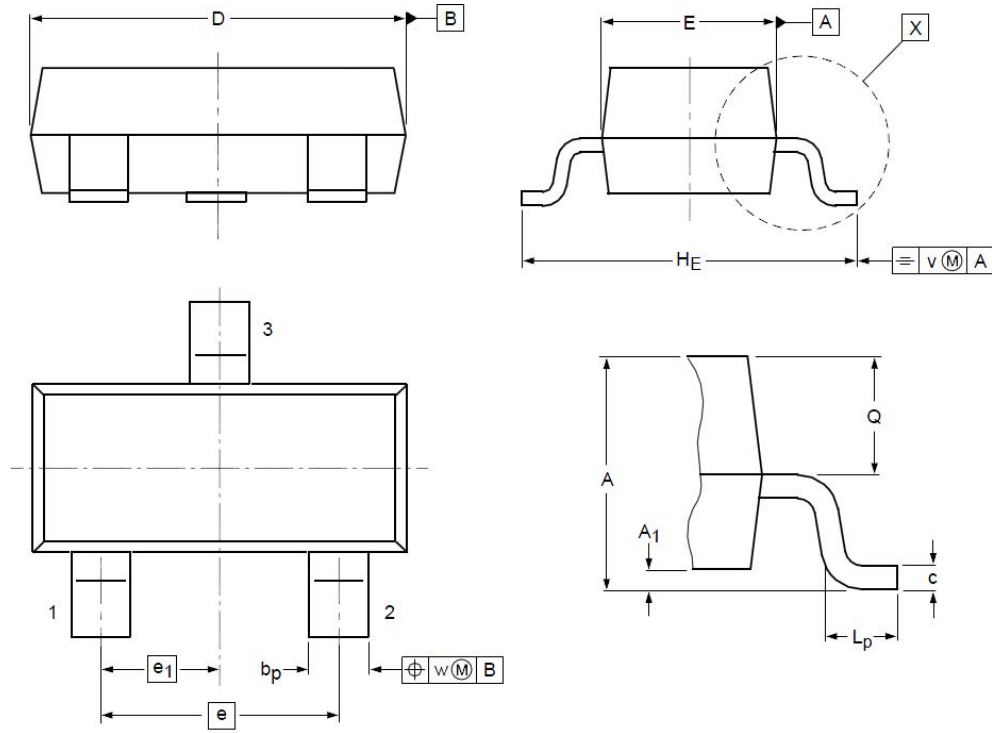
Qg Gate Charge (nC)  
**Figure 9 Gate Charge**



Vds Drain-Source Voltage (V)  
**Figure 10 Safe Operation Area**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

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


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.90	1.05	1.20	<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>	2.10	2.40	2.50
<b>b<sub>p</sub></b>	0.38	0.42	0.48	<b>L<sub>p</sub></b>	0.40	0.50	0.60
<b>c</b>	0.09	0.13	0.15	<b>Q</b>	0.45	0.49	0.55
<b>D</b>	2.80	2.92	3.00	<b>V</b>	--	0.20	--
<b>E</b>	1.20	1.33	1.40	<b>W</b>	--	0.10	--
<b>e</b>	--	1.90	--				