N-Channel Enhancement Mode MOSFET

Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free
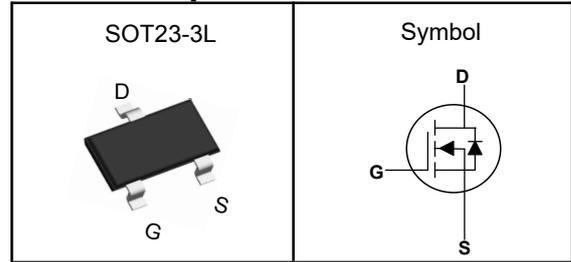
Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description

SOT23-3L	Symbol
D G S	D G S

V_{DSS}	20	V
$R_{DS(ON)-Typ}$	10	mΩ
I_D	6	A

Absolute Maximum Ratings(T$_A$=25℃, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	±12	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM}[①]	Pulse Drain Current Tested	30	A
I_D	Continuous Drain Current	6	A
P_D	Maximum Power Dissipation	1.4	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$	Thermal Resistance-Junction to Ambient	100	℃/W

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

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

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

N-Channel Enhancement Mode MOSFET

Electrical Characteristics (T$_J$=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV$_{DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$=250uA	20	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$=20V, V$_{GS}$=0V	---	---	1	uA
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250uA	0.5	---	0.9	V
I$_{GSS}$	Gate Leakage Current	V$_{GS}$=±12V, V$_{DS}$=0V	---	---	±100	nA
R$_{DS(ON)}$	Drain-Source On-state Resistance	V$_{GS}$=4.5V , I$_D$=6A	---	10	13	mΩ
		V$_{GS}$=2.5V , I$_D$=5.5A	---	14	18	mΩ
Dynamic Characteristics[5]						
C$_{iss}$	Input Capacitance	V$_{GS}$=0V, V$_{DS}$=10V, Freq.=1MHz	---	900	---	pF
C$_{oss}$	Output Capacitance		---	220	---	
C$_{rss}$	Reverse Transfer Capacitance		---	100	---	
T$_{d(on)}$	Turn-on Delay Time	V$_{DD}$=10V ,I$_D$=6A, V$_{GS}$=4.5V , R$_G$=6Ω	---	10	---	nS
T$_r$	Turn-on Rise Time		---	11		
T$_{d(off)}$	Turn-off Delay Time		---	35	---	
T$_f$	Turn-off Fall Time		---	30	---	
gfs	Forward Transconductance	V$_{DS}$=5V , I$_D$=6A	---	10	---	S
Q$_g$	Total Gate Charge	V$_{DS}$=10V , V$_{GS}$=4.5V , I$_D$=6A	---	12	---	nC
Q$_{gs}$	Gate-Source Charge		---	2.3	---	
Q$_{gd}$	Gate-Drain Charge		---	1	---	
Source-Drain Characteristics （T$_J$=25℃）						
V$_{SD}$[4]	Diode Forward Voltage	I$_S$=6A, V$_{GS}$=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
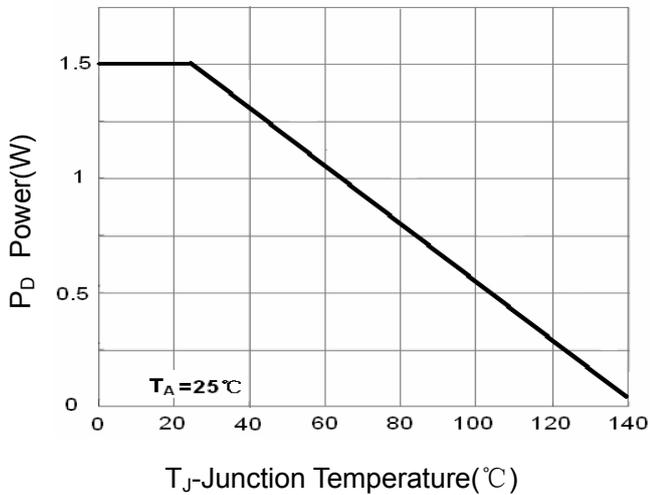
Figure 1 Power Dissipation
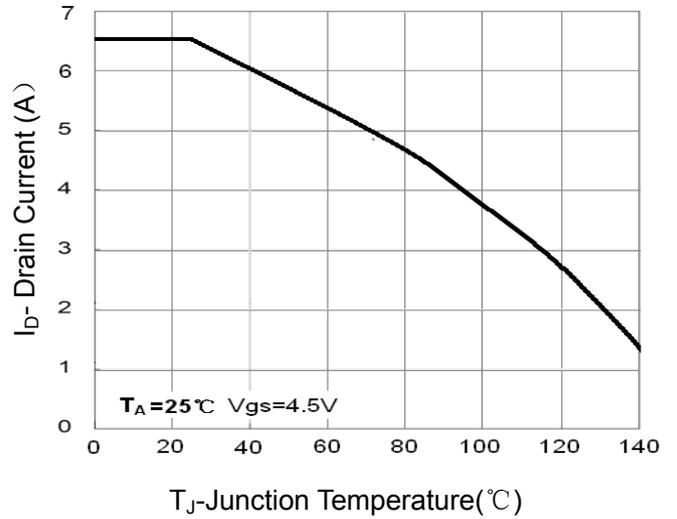
Figure 2 Drain Current
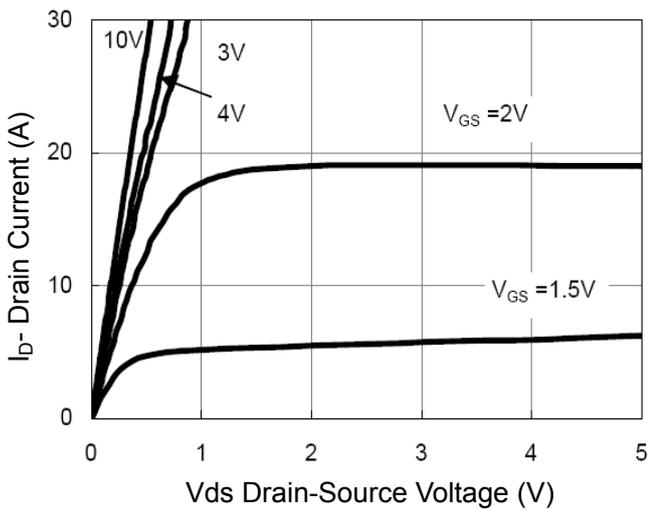
Figure 3 Output Characteristics
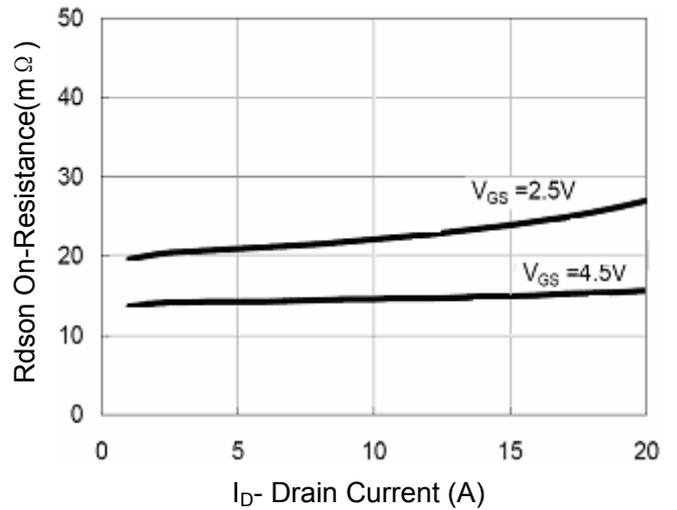
Figure 4 Drain-Source On-Resistance
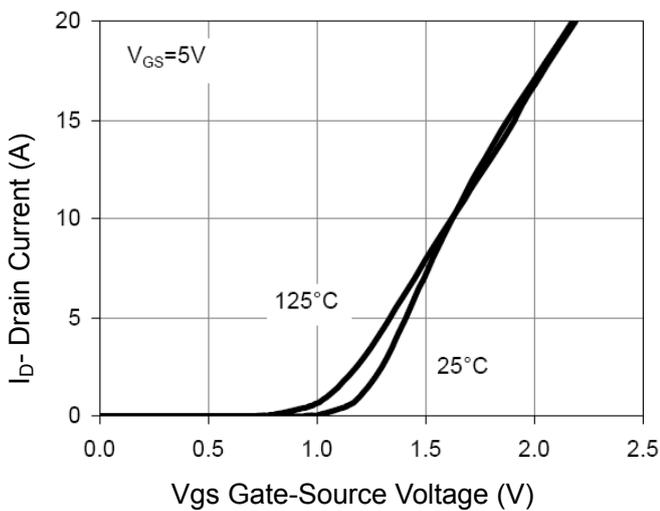
Figure 5 Transfer Characteristics
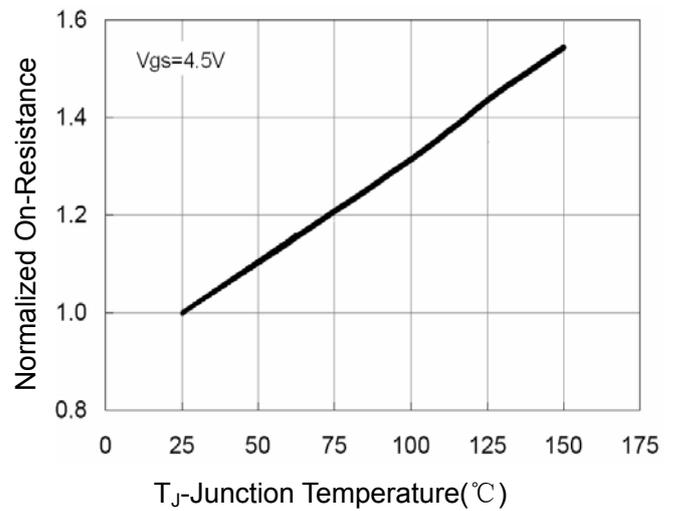
Figure 6 Drain-Source On-Resistance

N-Channel Enhancement Mode MOSFET
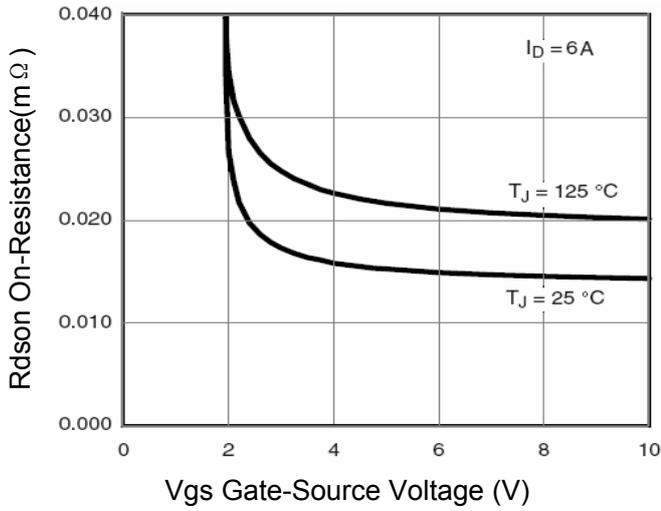
Figure 7 Rdson vs Vgs
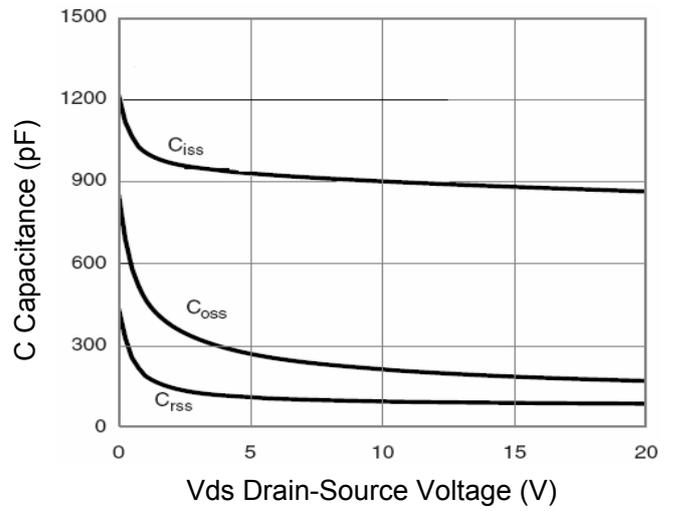
Figure 8 Capacitance vs Vds
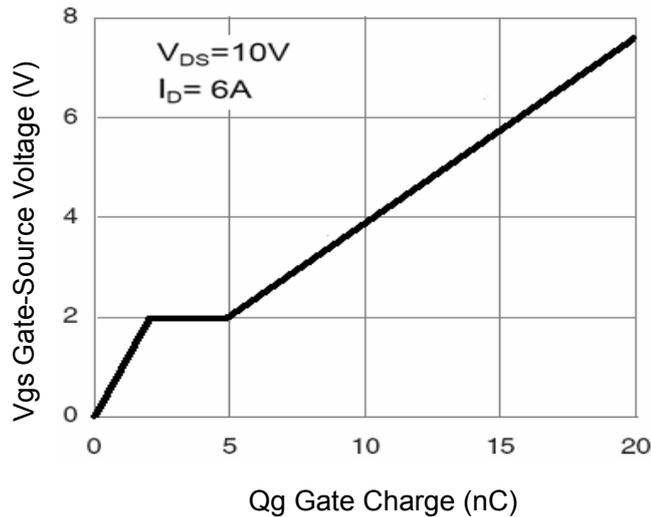
Figure 9 Gate Charge
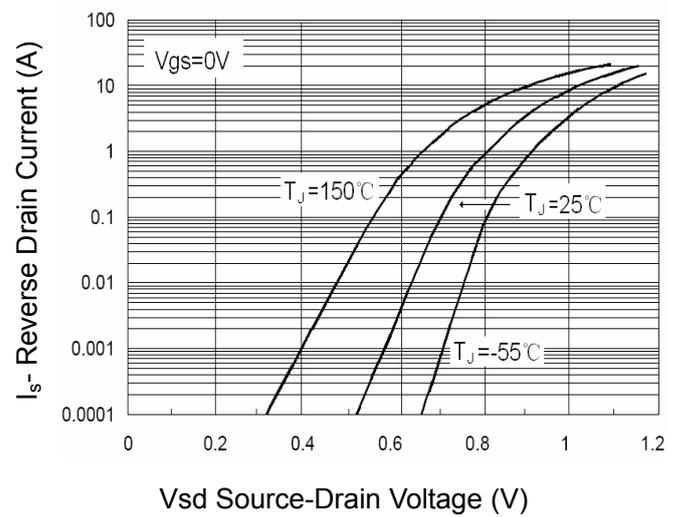
Figure 10 Source- Drain Diode Forward
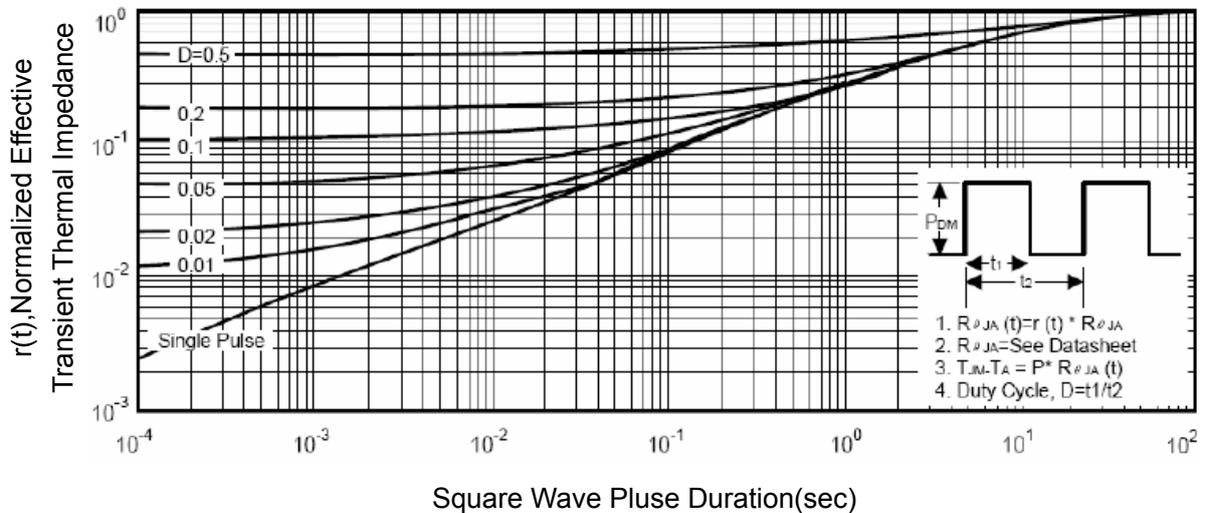
Figure 11 Normalized Maximum Transient Thermal Impedance

N-Channel Enhancement Mode MOSFET

SOT23-3L Package Outline Dimensions

Symbol	Dimensions X Q L W P P			Symbol	Dimensions X Q L W P P		
	Min	Typ	Max		Min	Typ	Max
A				e₁			
A₁				H_E			
b_p				L_P			
c				Q			
D				V			
E				W			
e							