Common-Drain Dual N-Channel Enhancement Mode MOSFET
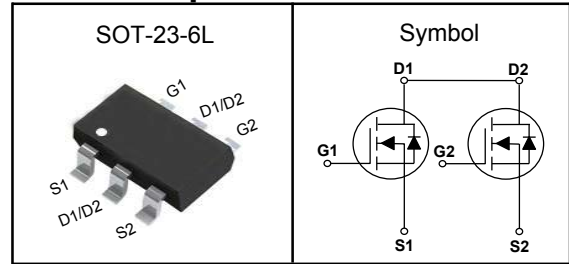
Features

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

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description

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

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

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM} [①]	Pulse Drain Current Tested	25	A
I_D	Continuous Drain Current	6	A
P_D	Maximum Power Dissipation	1.25	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{θJA}$	Thermal Resistance-Junction to Ambient	357	℃/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.

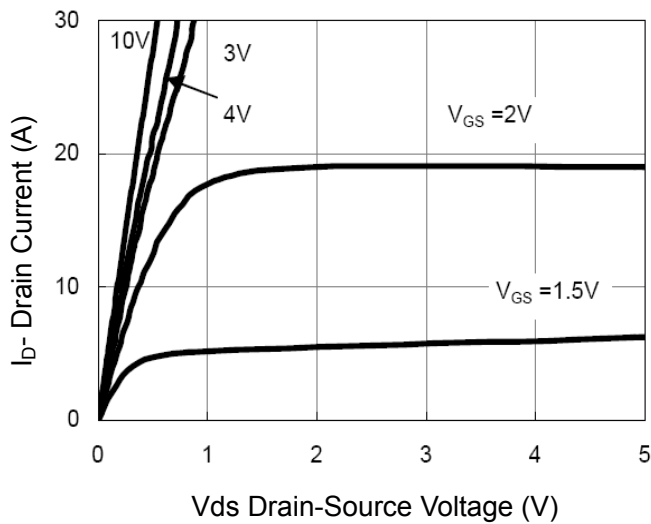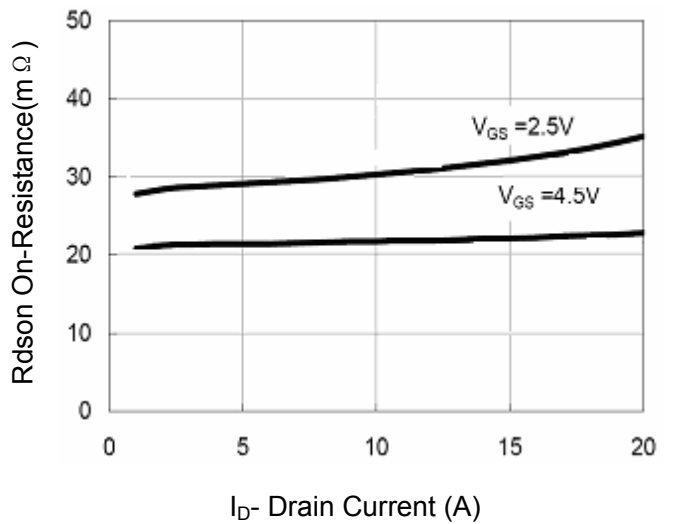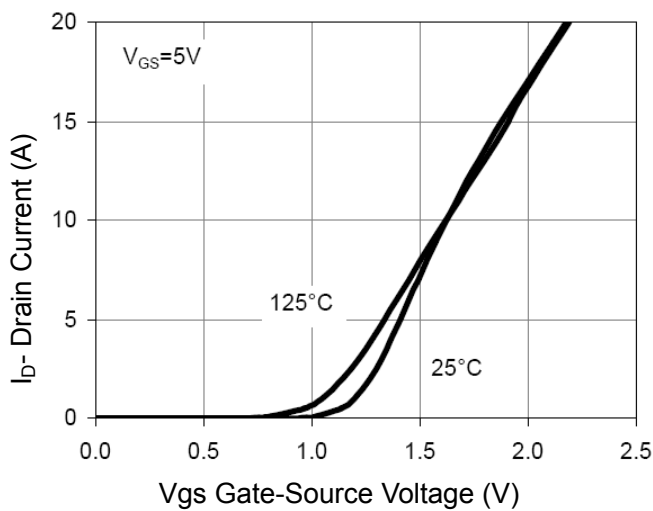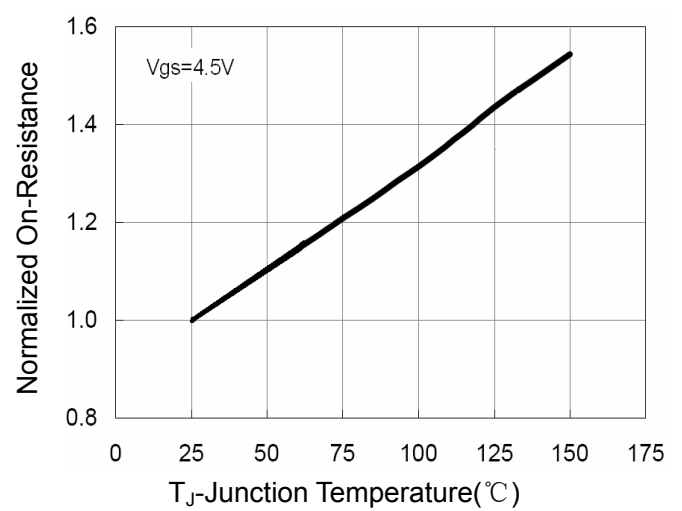## Common-Drain Dual N-Channel Enhancement Mode MOSFET

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}=18V, 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}=±10V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=4.5V , I_D=6A	---	20	25	mΩ
		V_{GS}=2.5V , I_D=5A	---	26	32	mΩ
Dynamic Characteristics[5]						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=8V, Freq.=1MHz	---	800	---	pF
C_{oss}	Output Capacitance		---	155	---	
C_{rss}	Reverse Transfer Capacitance		---	125	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DD}=10V , V_{GS}=4V , R_G=10Ω, I_D=1A	---	18	---	nS
T_r	Turn-on Rise Time		---	5		
$T_{d(off)}$	Turn-off Delay Time		---	43	---	
T_f	Turn-off Fall Time		---	20	---	
Q_g	Total Gate Charge	V_{DS}=10V , V_{GS}=4.5V , I_D=4A	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	2.3	---	
Q_{gd}	Gate-Drain Charge		---	2.5	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}[4]	Diode Forward Voltage	I_S=1.25A, 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.
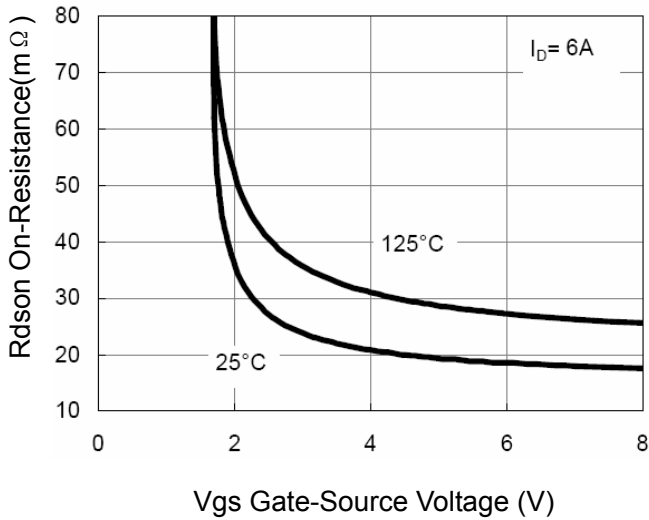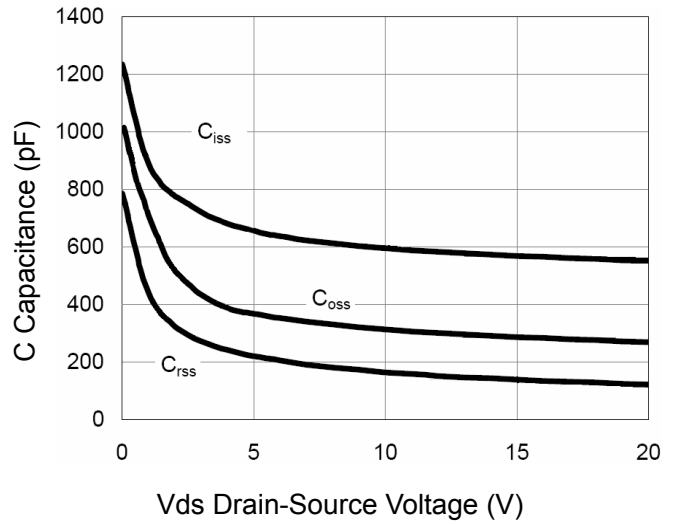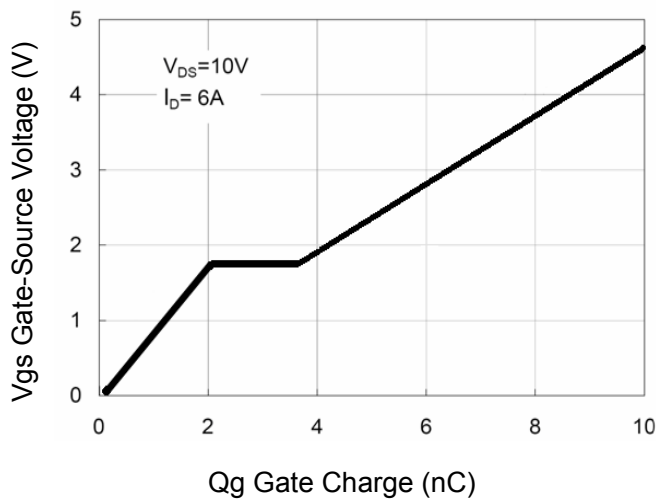
Common-Drain Dual N-Channel Enhancement Mode MOSFET

Typical Characteristics
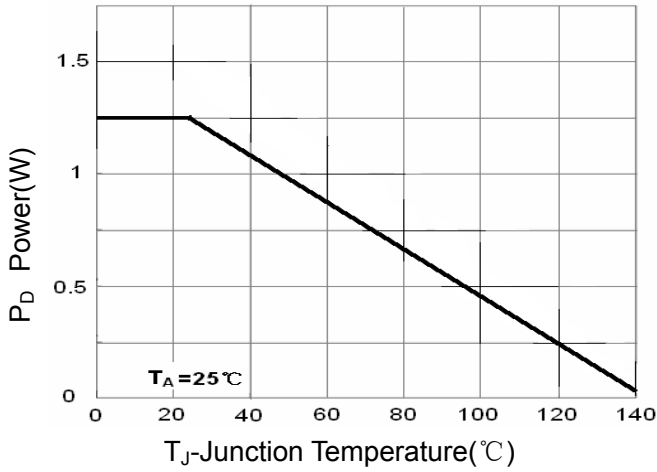
Figure 1 Power Dissipation
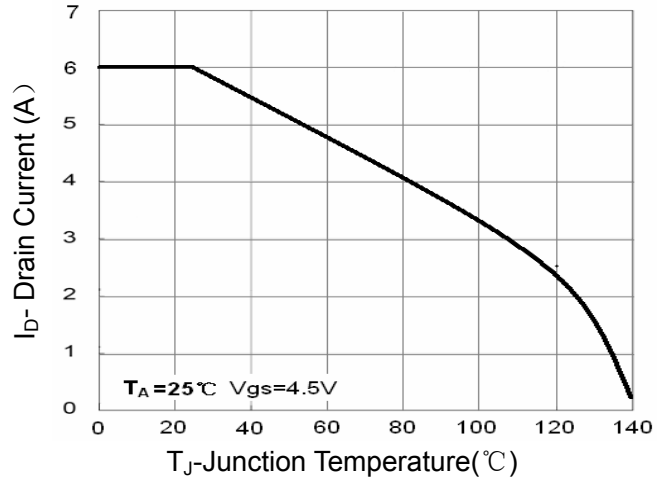
Figure 2 Drain Current

Figure 3 Output Characteristics

Figure 4 Drain-Source On-Resistance

Figure 5 Transfer Characteristics

Figure 6 Drain-Source On-Resistance

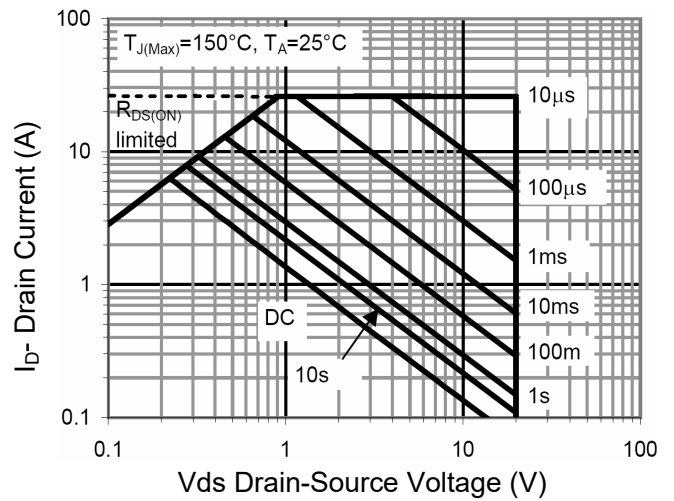## Common-Drain Dual N-Channel Enhancement Mode MOSFET
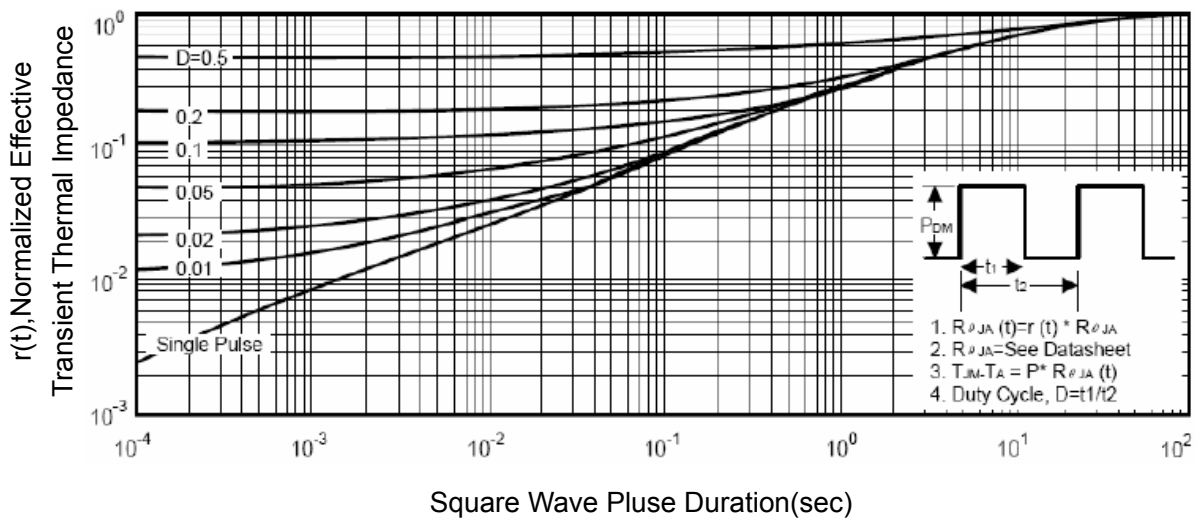

Figure 7 Rdson vs Vgs

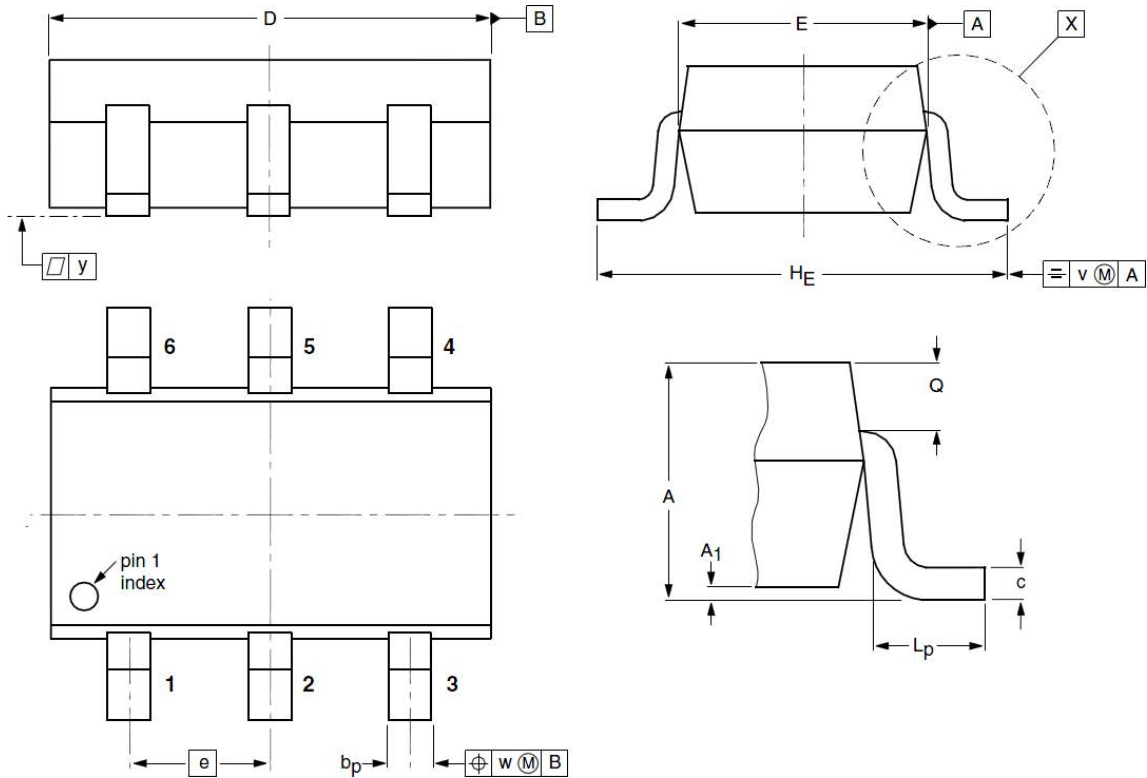**Figure 8 Capacitance vs Vds**

Figure 9 Gate Charge

Figure 10 Safe Operation Area

Figure 11 Normalized Maximum Transient Thermal Impedance

Common-Drain Dual N-Channel Enhancement Mode MOSFET

SOT23-6L Package Outline Dimensions

Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	**Typ**	**Max**		**Min**	**Typ**	**Max**
A	0.90	1.07	1.45	**A₁**	0.01	0.05	0.15
b$_p$	0.30	0.40	0.50	**c**	0.10	0.15	0.22
D	2.70	2.92	3.10	**E**	1.35	1.55	1.75
e	--	0.95	--	**H$_E$**	2.50	2.80	3.00
L$_P$	0.30	0.45	0.60	**Q**	0.23	0.29	0.33
v	--	0.20	--	**W**	--	0.20	--
y	--	0.10	--				