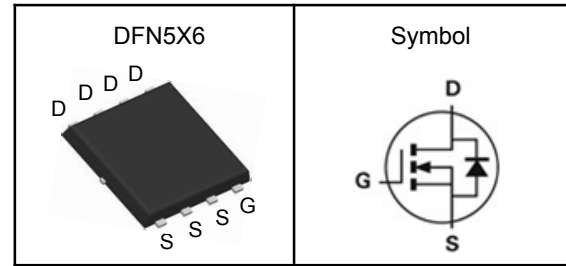


N-Channel Enhancement Mode MOSFET

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}	30	V
$R_{DS(ON)-Typ}$	2.1	mΩ
I_D	115	A

Absolute Maximum Ratings($T_c=25^{\circ}C$, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	-55 to 150	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
$I_{DM}^{①}$	Pulse Drain Current Tested	$T_c=25^{\circ}C$	141
I_D	Continuous Drain Current	$T_c=25^{\circ}C$	115
		$T_c=100^{\circ}C$	73
P_D	Maximum Power Dissipation	$T_c=25^{\circ}C$	50
$E_{AS}^{②}$	Avalanche Energy, Single pulse $L=0.1mH$	101	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	50	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.5	$^{\circ}C/W$

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

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

Note ③ : Surface Mounted on $1in^2$ 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
Static Electrical Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	---	---	1	uA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	---	2.0	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
R _{DS(ON)}	Drain-Source On-state Resistance	V _{GS} =10V, I _D =20A	---	2.1	2.6	mΩ
		V _{GS} =4.5V, I _D =15A	---	2.8	3.6	
gfs	Forward Transconductance	V _{DS} =5V , I _D =20A	---	38	---	S
Dynamic Characteristics ^⑤						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Freq.=1MHz	---	4240	---	pF
C _{oss}	Output Capacitance		---	490	---	
C _{rss}	Reverse Transfer Capacitance		---	320	---	
T _{d(on)}	Turn-on Delay Time	V _{DD} =15V , V _{GS} =10V , R _G =2.5Ω, I _D =1A	---	33	---	nS
T _r	Turn-on Rise Time		---	23	---	
T _{d(off)}	Turn-off Delay Time		---	70	---	
T _f	Turn-off Fall Time		---	25	---	
Q _g	Total Gate Charge	V _{DS} =25V,V _{GS} =10V, I _D =14A	---	88	---	nC
Q _{gs}	Gate-Source Charge		---	8.7	---	
Q _{gd}	Gate-Drain Charge		---	2.4	---	
Source-Drain Characteristics						
V _{SD} ^④	Diode Forward Voltage	V _{GS} =0V , I _S =15A , T _J =25°C	---	0.7	1.1	V
t _{rr}	Reverse Recovery Time	I _F =15A ,	---	20	---	nS
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs, T _J =25°C	---	8.7	---	nC

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

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

N-Channel Enhancement Mode MOSFET

Typical Characteristics

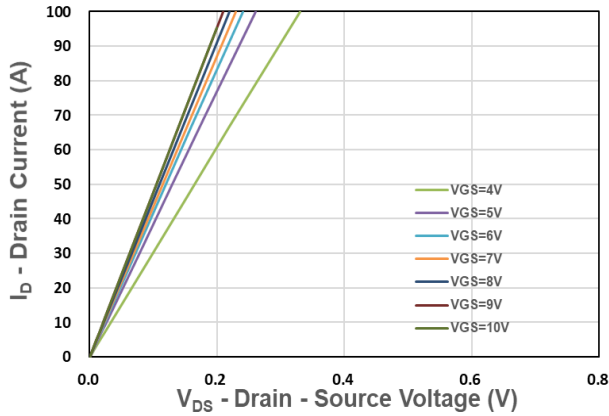


Figure 1. Output Characteristics

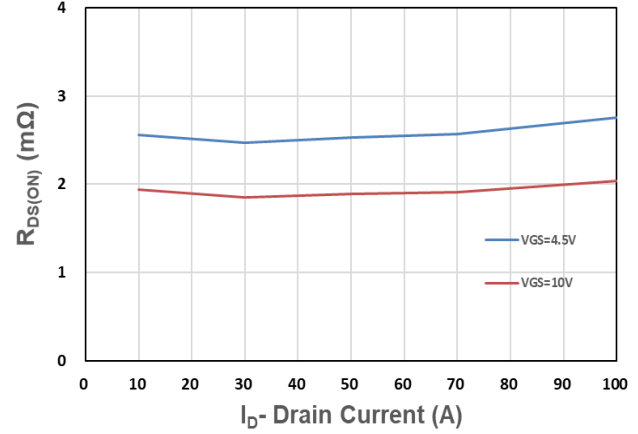


Figure 2. On-Resistance vs. I_D

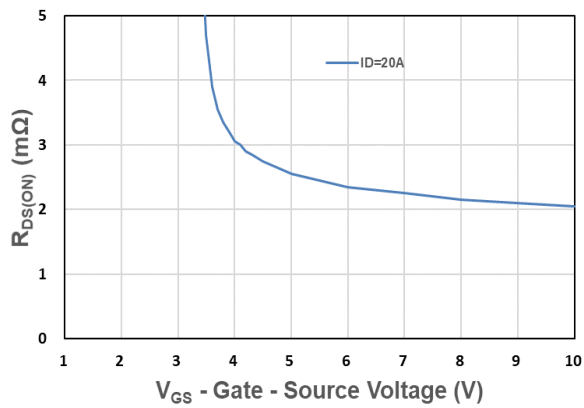


Figure 3. On-Resistance vs. V_{GS}

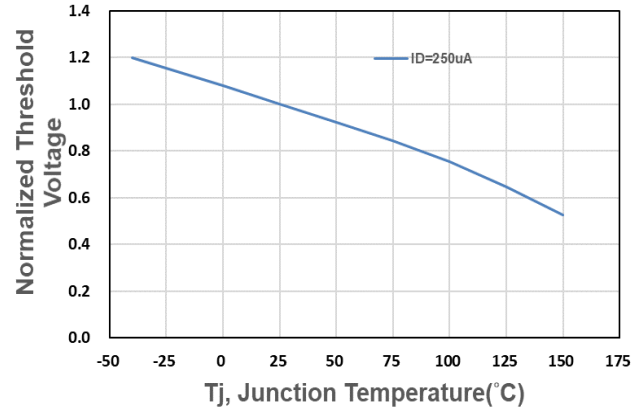


Figure 4. Gate Threshold Voltage

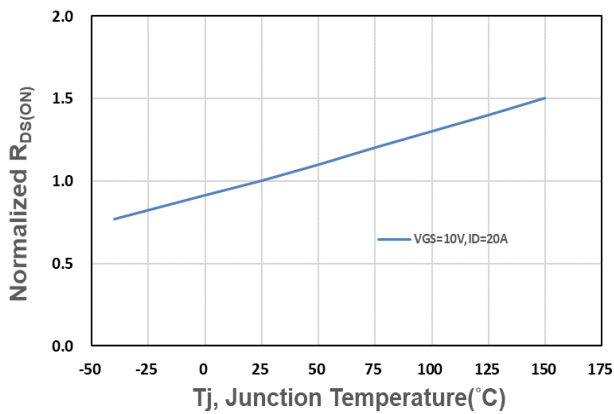


Figure 5. Drain-Source On Resistance

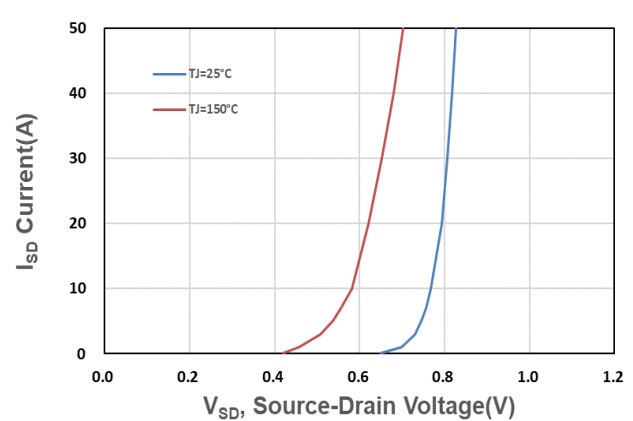
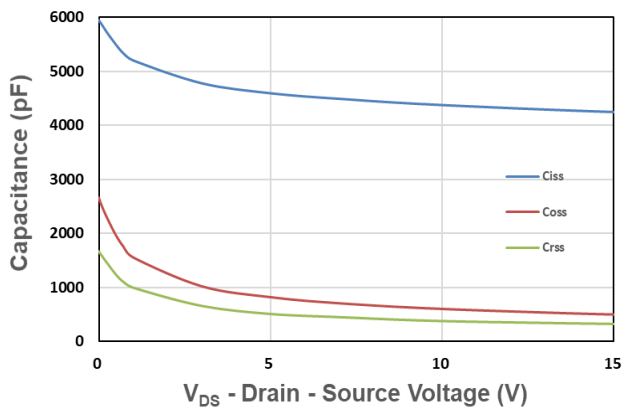
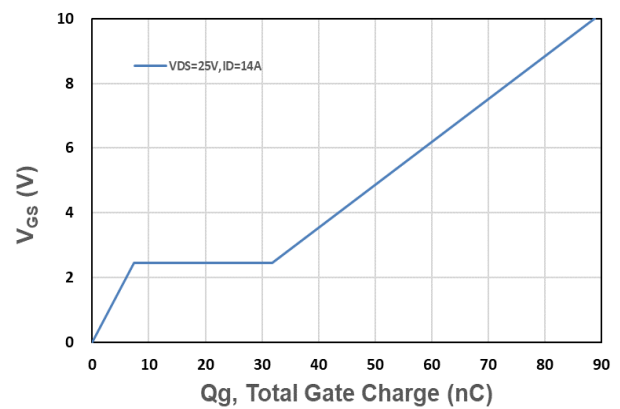
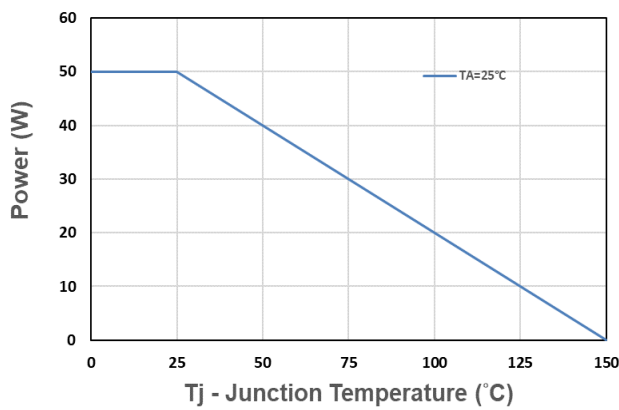
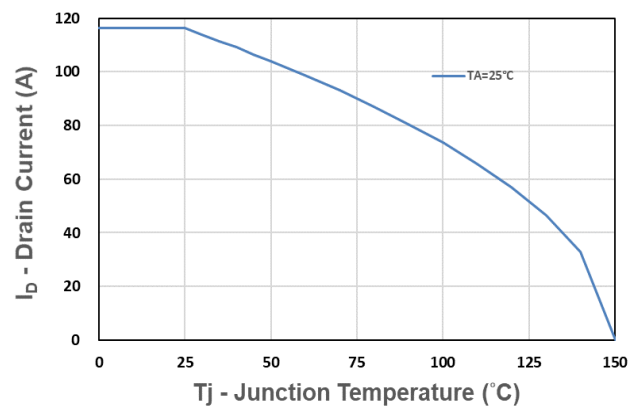
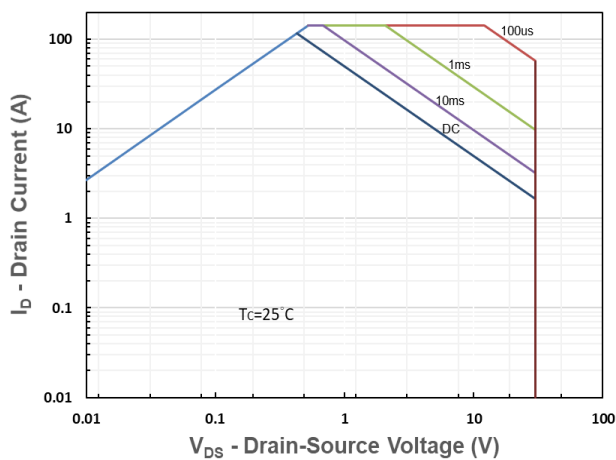
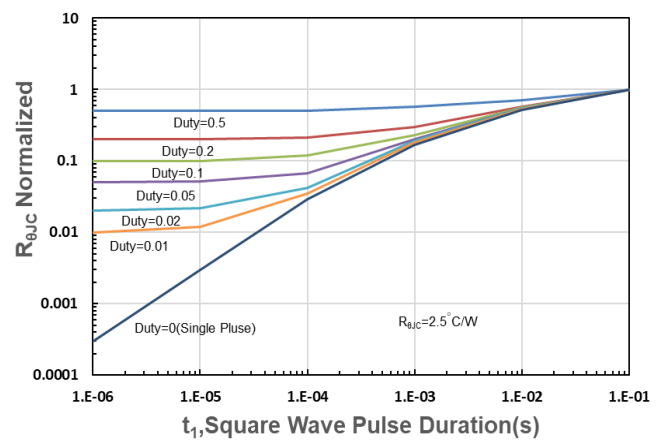
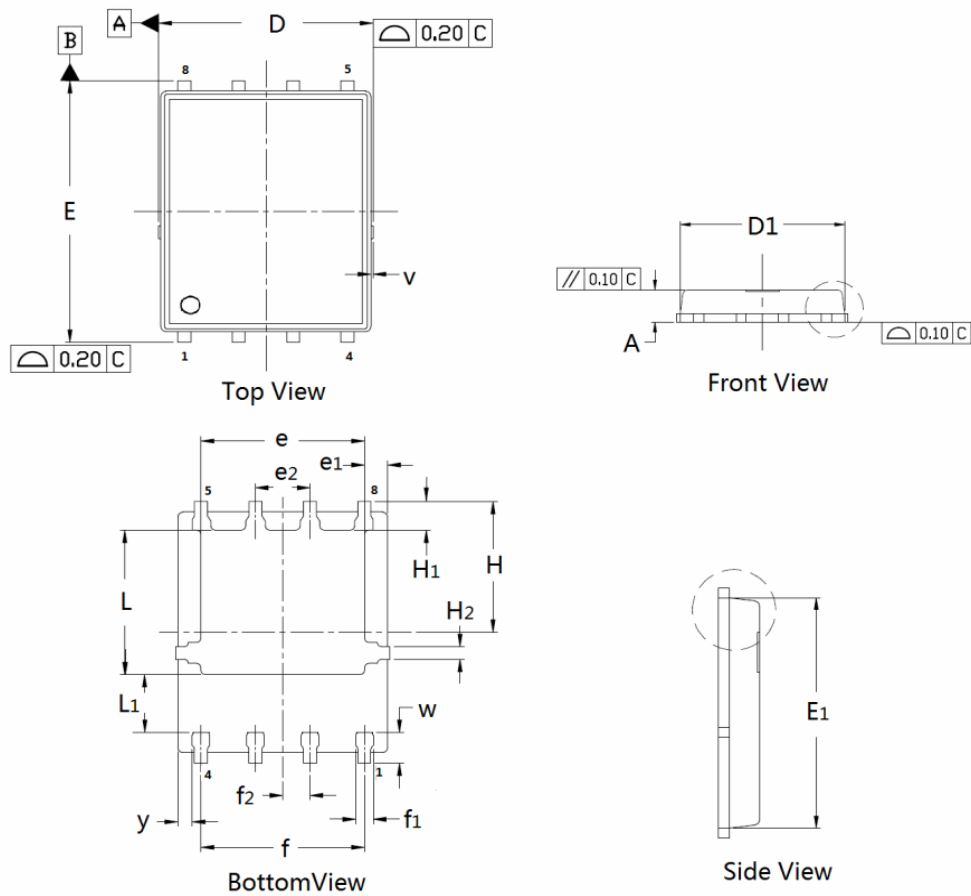


Figure 6. Source-Drain Diode Forward

N-Channel Enhancement Mode MOSFET

Figure 7. Capacitance

Figure 8. Gate Charge Characteristics

Figure 9. Power Dissipation

Figure 10. Drain Current

Figure 11. Safe Operating Area

Figure 12. $R_{\theta JC}$ Transient Thermal Impedance

N-Channel Enhancement Mode MOSFET
DFN5×6 Package Outline Data

DIMENSIONS (unit : mm)

Symbol		Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.02	1.10	D	4.90	4.98	5.10
D ₁	4.80	4.89	5.10	E	5.90	6.11	6.25
E ₁	5.65	5.74	5.95	e	3.72	3.80	3.92
e ₁	--	0.5	--	e ₂	--	1.	--
f	--	3.8	--	f ₁	0.31	0.37	0.51
f ₂	--	0.6	--	H	--	3.	--
H ₁	0.59	0.63	0.79	H ₂	0.26	0.28	0.32
L	3.35	3.45	3.65	L ₁	--	1.	--
v	--	0.1	--	w	0.64	0.68	0.84
y	--	0.3	--		--		--