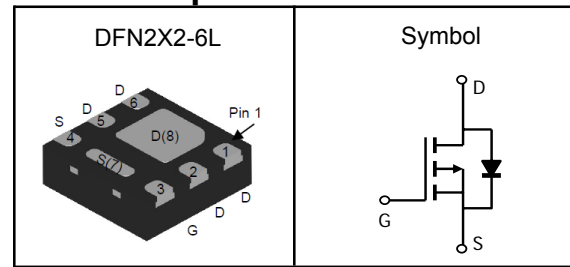


**P-Channel Enhancement Mode MOSFET**
**Features**

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

**Applications**

- Power Management in Desktop Computer
- DC/DC Converters

**Pin Description**


V <sub>bss</sub>	-30	V
R <sub>ds(ON)-Typ</sub>	13	mΩ
I <sub>d</sub>	-20	A

**Absolute Maximum Ratings**(T<sub>C</sub>=25°C, Unless Otherwise Noted)

Symbol	Parameter	P-Channel	Unit
V <sub>bss</sub>	Drain-Source Voltage	-30	V
V <sub>GSS</sub>	Gate-Source Voltage	±20	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	-80	A
I <sub>d</sub>	Continuous Drain Current	-20	A
P <sub>D</sub>	Maximum Power Dissipation	9	W

**Thermal Characteristics**

Symbol	Parameter	Rating	Unit
R <sub>θJA</sub> <sup>③</sup>	Thermal Resistance-Junction to Ambient	68	°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.

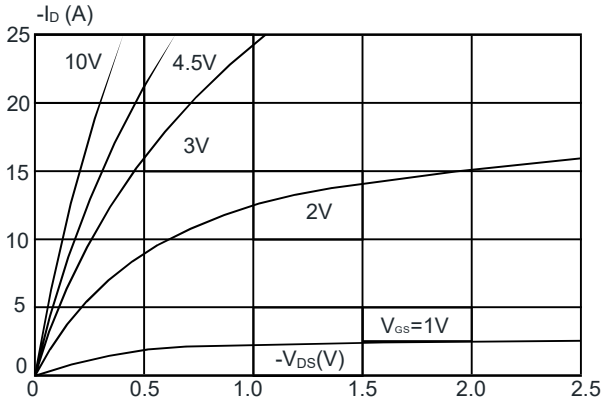
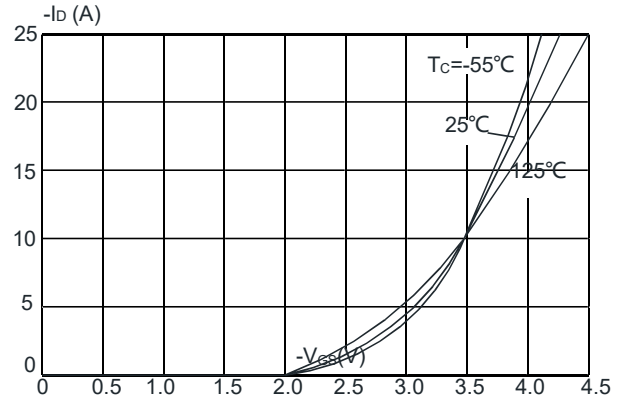
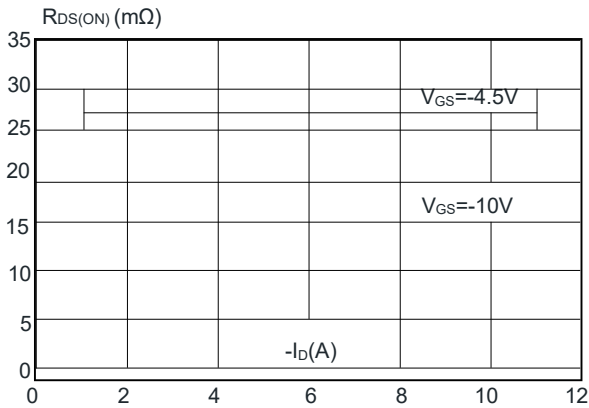
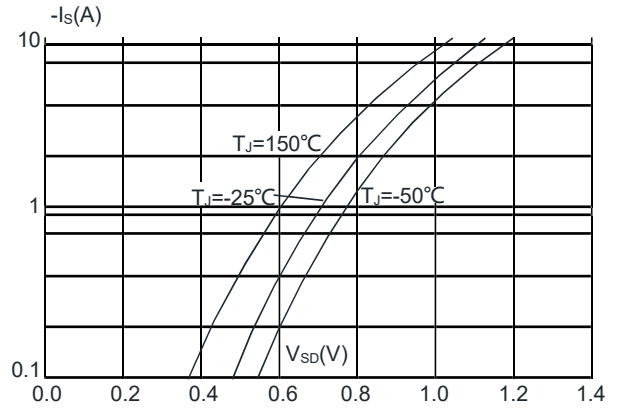
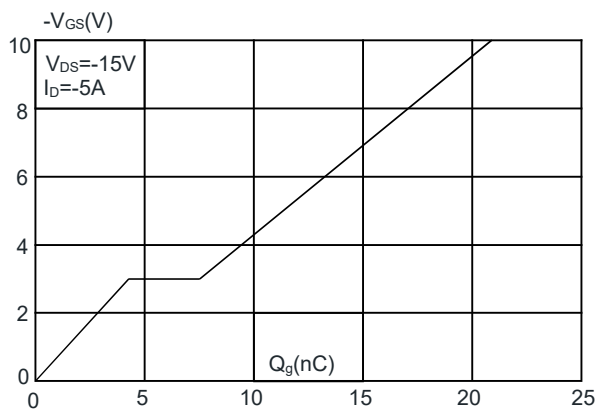
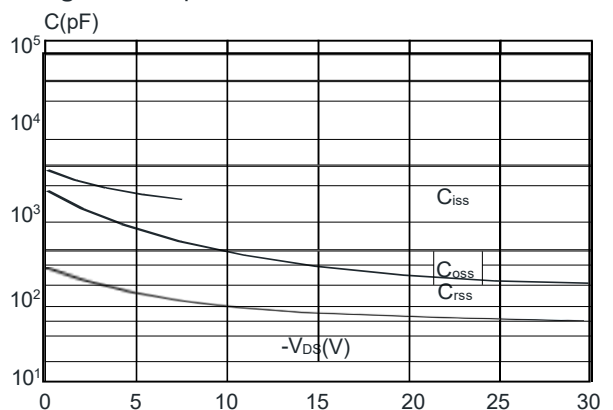
Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.

**P-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	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$	---	---	-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	$V_{GS}=-10V, I_D=-10A$	---	13	16	m $\Omega$
		$V_{GS}=-4.5V, I_D=-5A$	---	18	27	
gfs	Forward Transconductance	$V_{DS}=-10V, I_D=-1A$	---	7	---	S
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=-15V,$ Freq.=1MHz	---	1330	---	pF
$C_{oss}$	Output Capacitance		---	180	---	
$C_{rss}$	Reverse Transfer Capacitance		---	150	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, V_{GS}=-10V,$ $R_G=3.3\Omega, I_D=-5A$	---	10	---	nS
$T_r$	Turn-on Rise Time		---	13	---	
$T_{d(off)}$	Turn-off Delay Time		---	50	---	
$T_f$	Turn-off Fall Time		---	20	---	
$Q_g$	Total Gate Charge	$V_{DS}=-15V,$ $V_{GS}=-10V, I_D=-5A$	---	22	---	nC
$Q_{gs}$	Gate-Source Charge		---	1.8	---	
$Q_{gd}$	Gate-Drain Charge		---	2.2	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}$ <sup>④</sup>	Diode Forward Voltage	$I_S=-5A, V_{GS}=0V$	---	---	-1.2	V

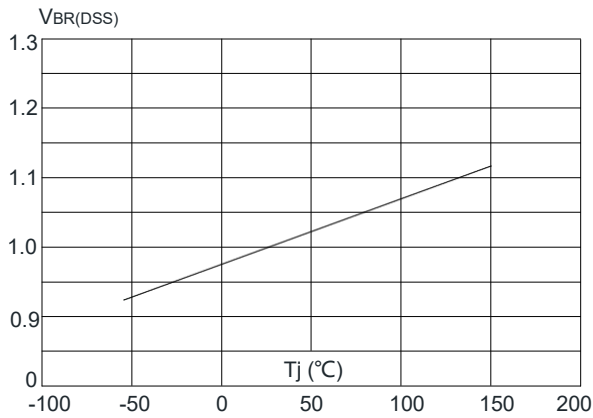
Note ④: Pulse test (pulse width 300us, duty cycle 2%).

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

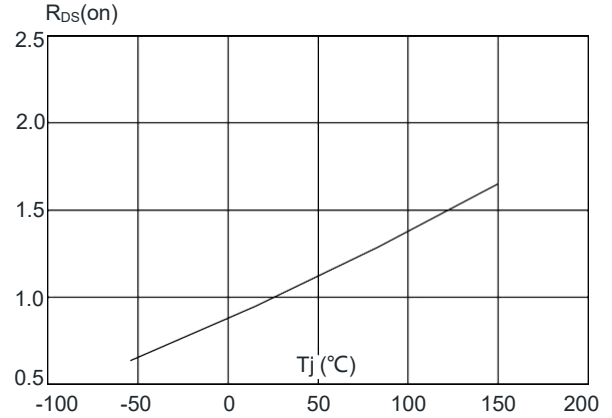
**P-Channel Enhancement Mode MOSFET**
**Typical Characteristics**
**Figure 1: Output Characteristics**

**Figure 2: Typical Transfer Characteristics**

**Figure 3: On-resistance vs. Drain Current**

**Figure 4 : Body Diode Characteristics**

**Figure 5: Gate Charge Characteristics**

**Figure 6: Capacitance Characteristics**


**P-Channel Enhancement Mode MOSFET**

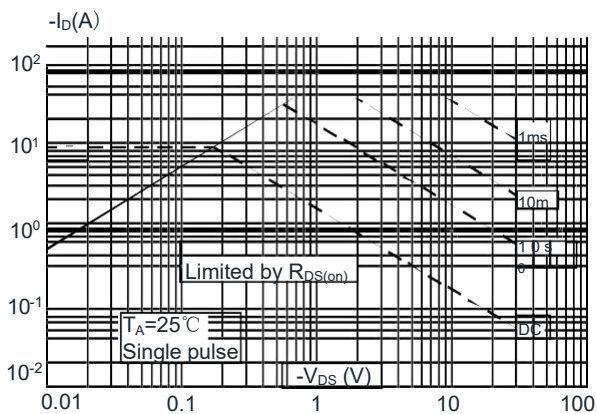
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

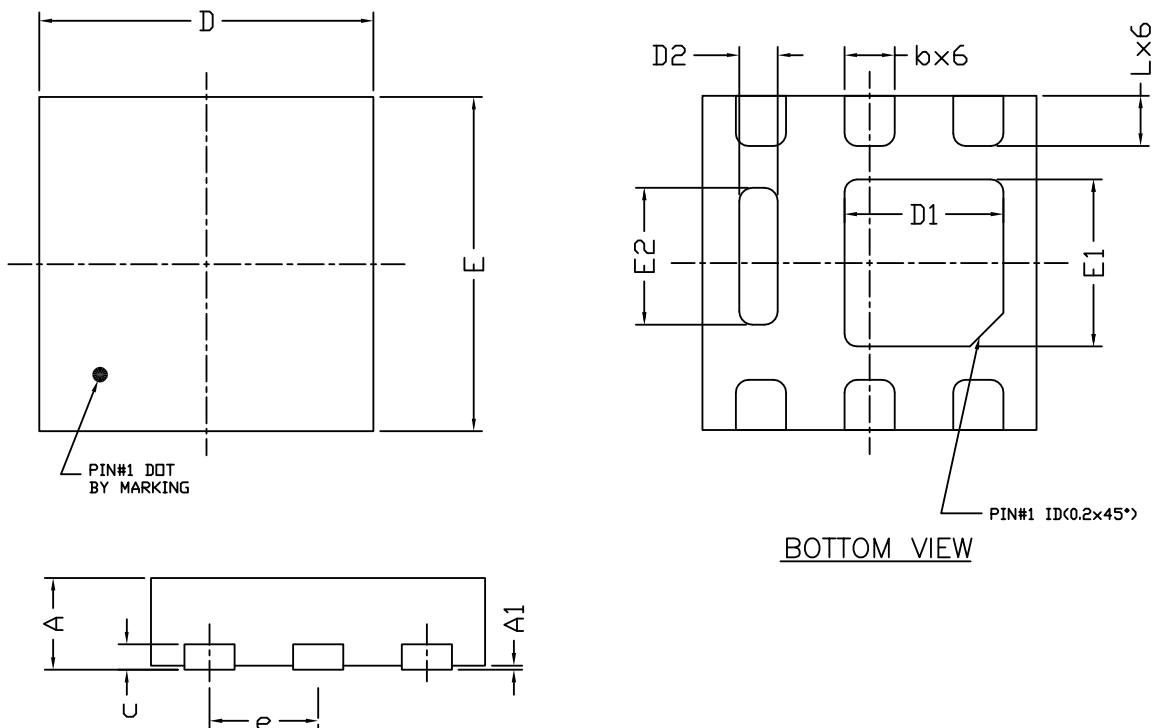


**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area



**P-Channel Enhancement Mode MOSFET**
**DFN2X2-6L Package Outline Dimensions**


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.50	0.55	0.60	<b>D2</b>	0.13	0.25	0.40
<b>A1</b>	0.00	---	0.05	<b>E</b>	1.90	2.00	2.10
<b>b</b>	0.25	0.30	0.35	<b>E1</b>	0.82	1.00	1.20
<b>c</b>	0.15 REF			<b>E2</b>	0.45	0.75	0.90
<b>D</b>	1.90	2.00	2.10	<b>e</b>	0.65 REF		
<b>D1</b>	0.85	0.95	1.05	<b>L</b>	0.20	0.25	0.32