

20V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

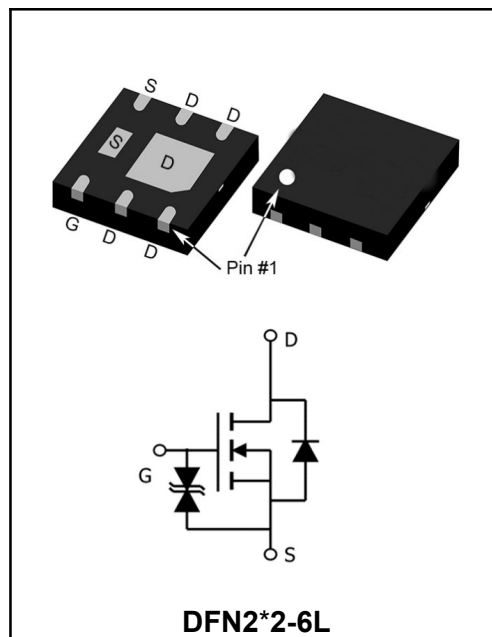
I_D	10A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	$< 15m\Omega$ (Typ: 11.5mΩ)

FEATURES

- ◆Epoxy meets UL-94 V-0 flammability rating and halogen free
- ◆Trench Power LV MOSFET technology
- ◆High Power and current handing capability

APPLICATION

- ◆PWM application
- ◆Load switch



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current ⁽²⁾	I_{DM}	40	A
Power Dissipation	P_D	2	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

Note:

1. The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm-40mm*1.1mm single layer FR-4 PCB board with 1in2 pad of 2oz. Copper in the still air environment. The maximum allowed junction temperature of 175 $^\circ\text{C}$. The value in any given application depends on the user's specific board design.

2. Practically the current is limited by the overall system design including the customer-specific PCB.

Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	V _{(BR)DSS}	20	-	-	V
Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	V _{GS(th)}	0.45	0.7	1.0	V
Zero Gate Voltage Drain Current	V _{GS} = 0V, V _{DS} = 20V	I _{DSS}	-	-	1	uA
Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±12V	I _{GSS}	-	-	±10	uA
Static Drain-Source ON-Resistance	V _{GS} = 4.5V, I _D = 5A	R _{DS(ON)}	-	11.5	15	mΩ
	V _{GS} = 2.5V, I _D = 3A		-	14.5	19	mΩ
Source-Drain Voltage	V _{GS} =0V; I _F =1A	V _{SD}	-	-	1.2	V
Total Gate Charge	V _{GS} =4.5V	Q _g	-	3.9	-	nC
Gate Source Charge	I _D =4A	Q _{gs}	-	11	-	
Gate Drain Charge	V _{DS} =20V	Q _{gd}	-	1.3	-	
Input Capacitance	V _{DS} =4.5V V _{GS} =0V f=1MHz	C _{iss}	-	1100	-	pF
Output Capacitance		C _{oss}	-	100	-	
Reverse Transfer Capacitance		C _{rss}	-	2	-	
Turn-On Delay Time	V _{GS} = 4.5V V _{DD} = 20V I _D = 3.5A R _G = 3Ω	T _{d(on)}	-	10.6	-	ns
Rise Time		T _r	-	6	-	
Turn-Off Delay Time		T _{d(off)}	-	27.4	-	
Fall Time		T _f	-	7	-	

Ratings And Characteristic Curves

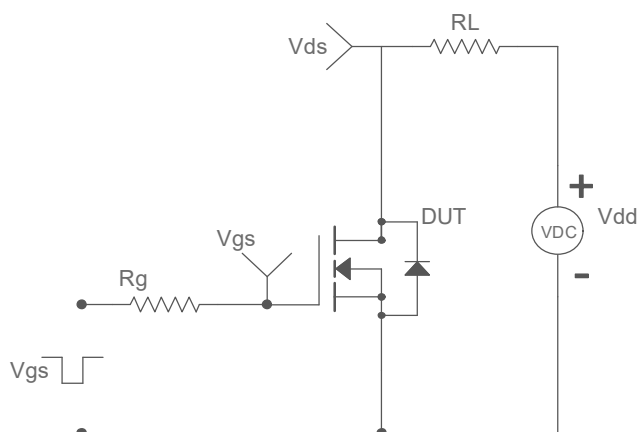


Figure 1 Switching Test Circuit

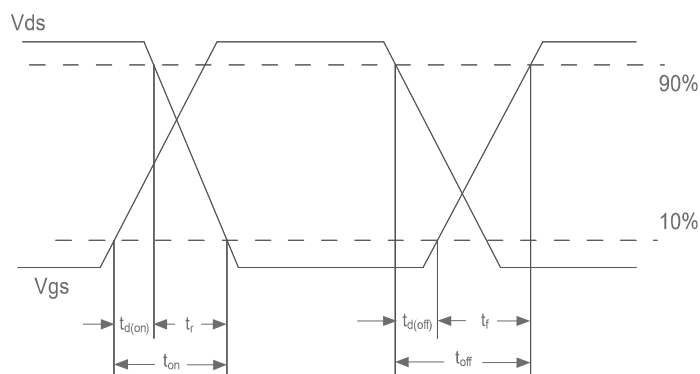


Figure 2 Switching Waveform

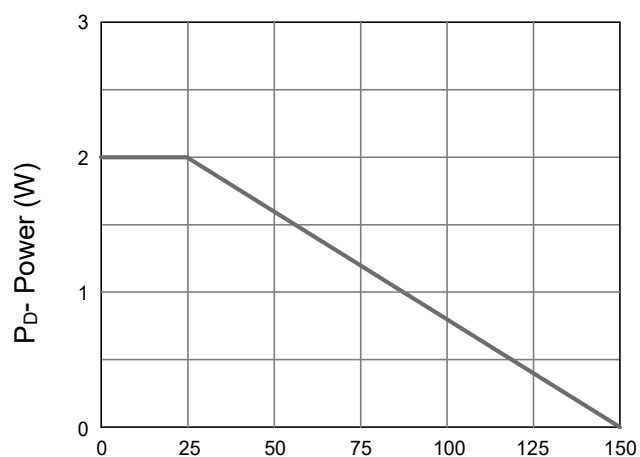


Figure 3 Power Dissipation

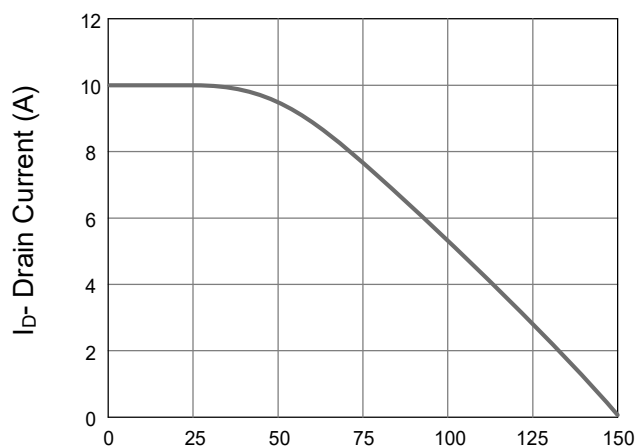


Figure 4 Drain Current

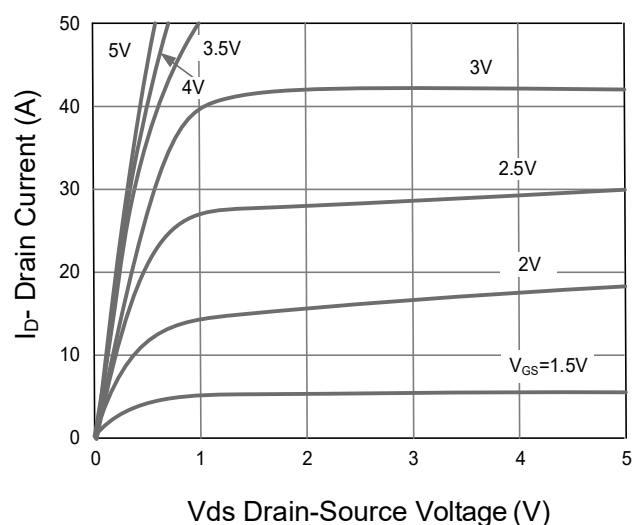


Figure 5 Output Characteristics

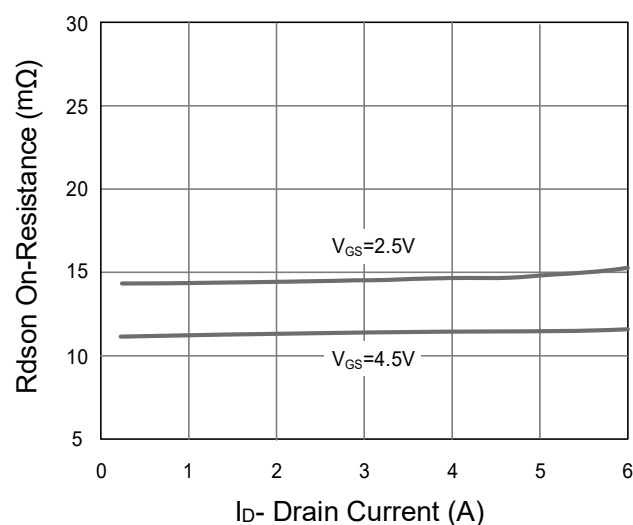


Figure 6 Rdson vs Drain Current

Ratings And Characteristic Curves

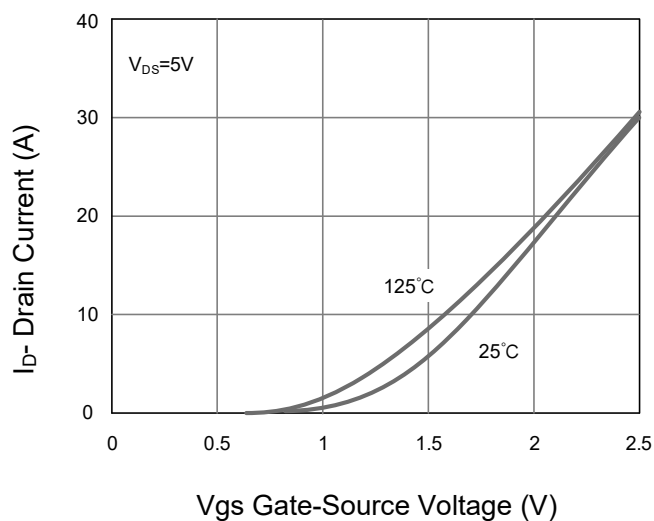


Figure 7 Transfer Characteristics

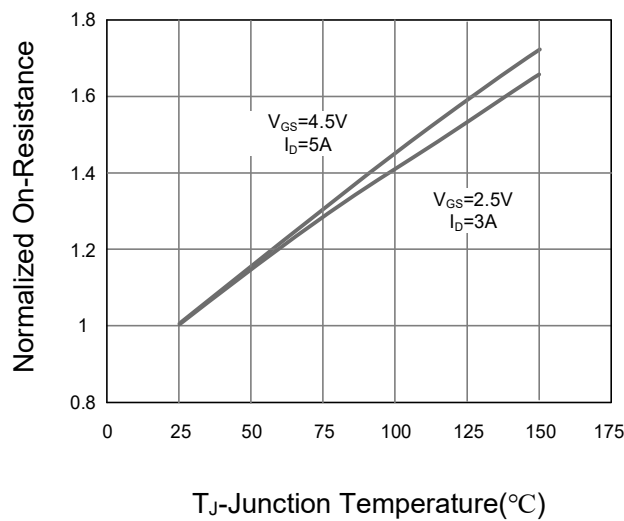


Figure 8 Rdson vs Junction Temperature

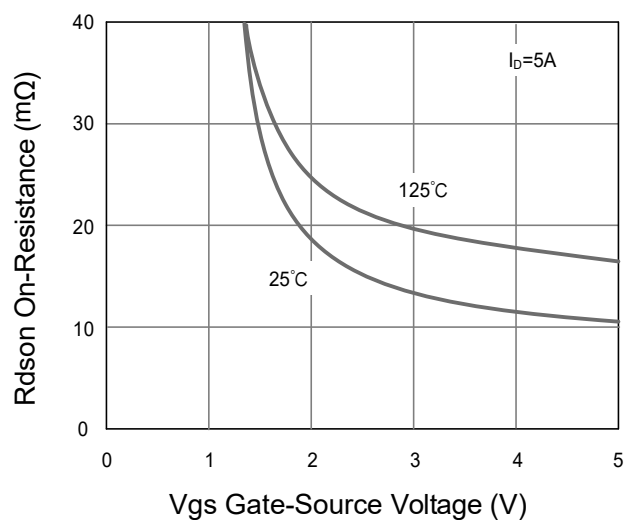


Figure 9 Rdson vs V_GS

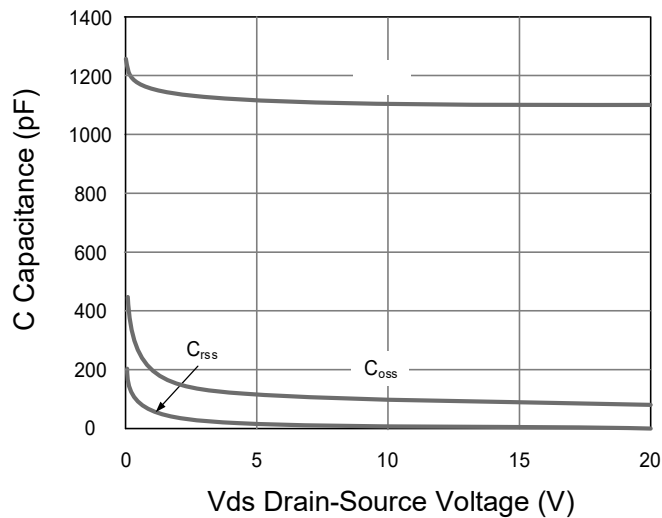


Figure 10 Capacitance vs V_DS

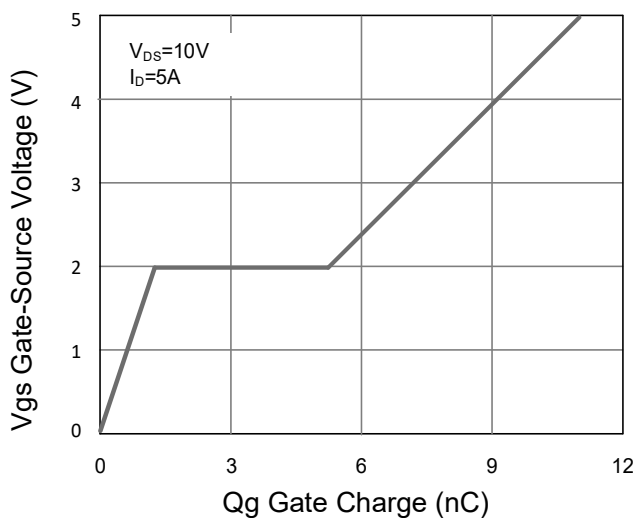


Figure 11 Gate Charge

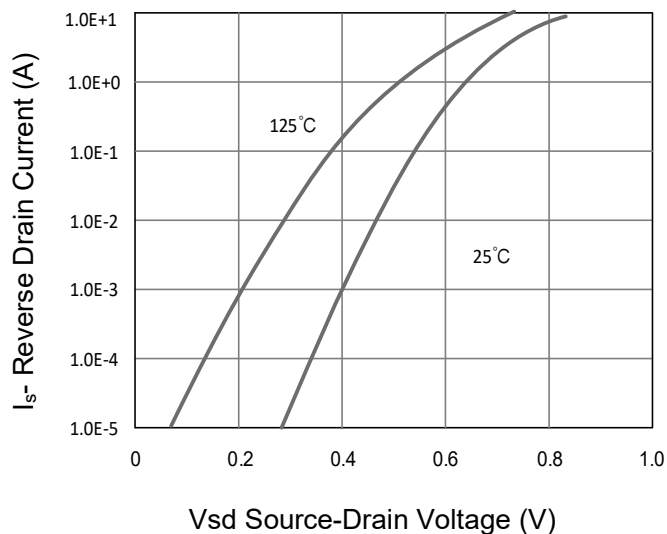


Figure 12 Source- Drain Diode Forward

Ratings And Characteristic Curves

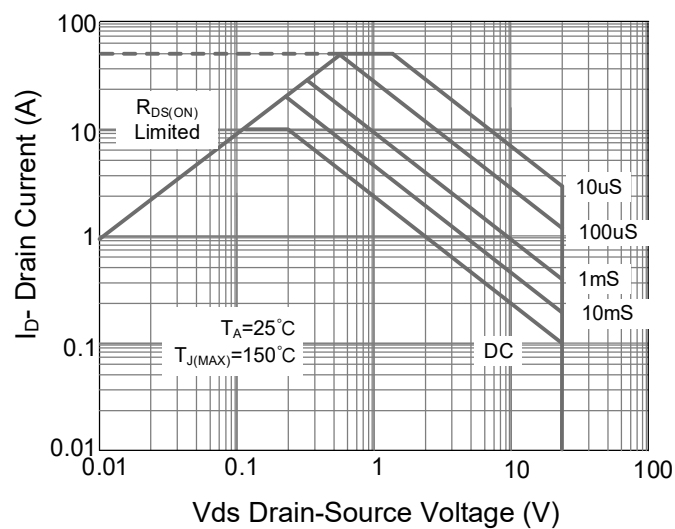


Figure 13 Safe Operation Area

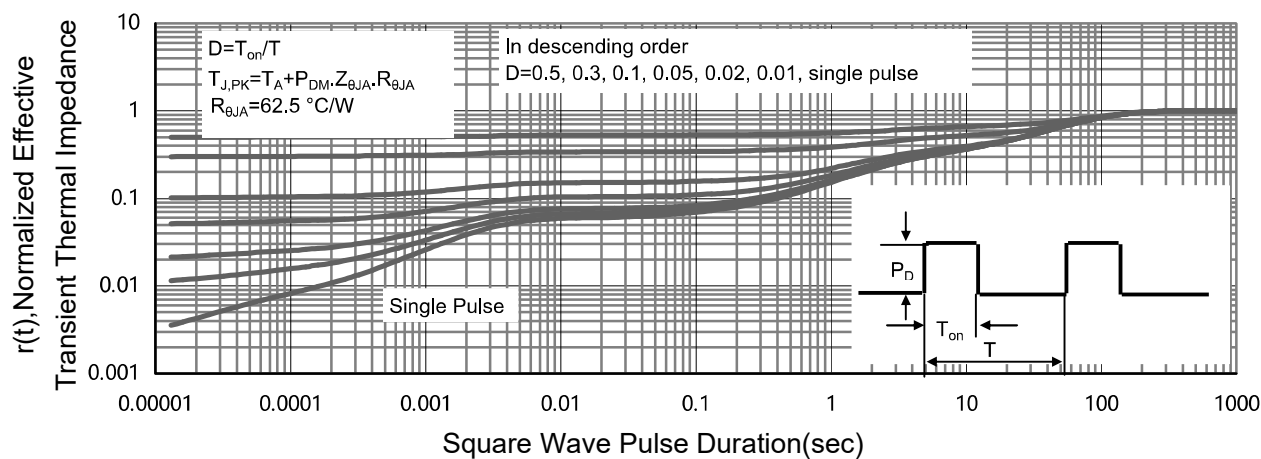


Figure 14 Normalized Maximum Transient Thermal Impedance

Ordering information

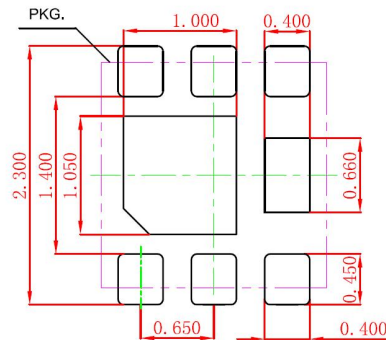
Package	Packing Description	Packing Quantity
DFN2*2-6L	Tape/Reel, 13" reel	3000PCS/Reel 30000PCS/Carton

Package Dimensions

DFN2*2-6L

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.45	0.65	18	26
A1	0.00	0.05	-	2
b	0.25	0.35	10	14
c	0.155			
D	1.90	2.05	75	81
e	0.65			
E	1.90	2.05	75	81
E1	1.05	1.25	41	49
D1	0.85	1.05	34	41
L	0.25	0.35	10	14

The recommended mounting pad size Millimeter(mm)



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