

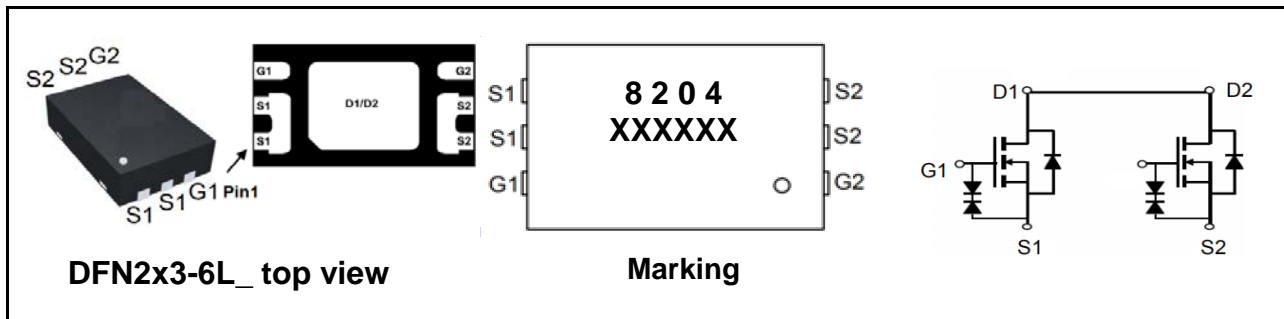
Dual N-Channel Enhancement-Mode MOSFET (20V,10A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (m Ω) Typ
20V	10A	7.2 @ $V_{GS} = 4.5V, I_D = 10A$
		7.5 @ $V_{GS} = 4.0V, I_D = 5A$
		12 @ $V_{GS} = 2.5V, I_D = 2.5A$

Features

- Super high density cell design for extremely low RDS(ON)
- Exceptional on-resistance and maximum DC current capability
- ESD Rating:2000V HBM
- Lead (Pb) -free and halogen-free



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Drain Current (Continuous) @ $T_A = 25^\circ C$	10	A
	Drain Current (Continuous) @ $T_A = 75^\circ C$	8	A
I_{DM}	Drain Current (Pulsed) ^a	32	A
P_D	Total Power Dissipation @ $T_A = 25^\circ C$	1.5	W
	Total Power Dissipation @ $T_A = 75^\circ C$	1.2	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	80	$^\circ C/W$

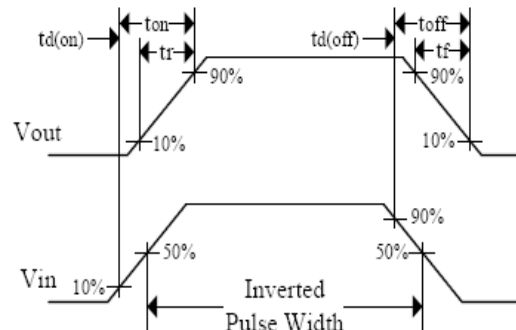
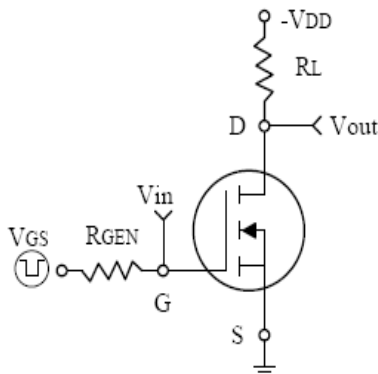
a: Repetitive Rating; Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off 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	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5	0.7	1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =10A	6	7.2	8.9	mΩ
		V _{GS} =4.0V, I _D =5A	6.3	7.5	9.2	
		V _{GS} =2.5V, I _D =2.5A	10.3	11	12.5	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =5A	5	-	-	s
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	1265	-	PF
C _{oss}	Output Capacitance		-	225	-	
C _{rss}	Reverse Transfer Capacitance		-	155	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =20A, V _{GS} =10V	-	29	-	nC
Q _{gs}	Gate-Source Charge		-	5.2	-	
Q _{gd}	Gate-Drain Charge		-	6.3	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _D =20A, V _{GEN} =10V, R _G =6Ω	-	35	-	nS
t _r	Turn-on Rise Time		-	26	-	
t _{d(off)}	Turn-off Delay Time		-	7	-	
t _f	Turn-off Fall Time		-	6	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward	V _{GS} =0V, I _S =10A	-	0.85	1.2	V

Note: Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%



Switching Test Circuit and Switching Waveforms

Typical Characteristics Curves (Ta=25°C, unless otherwise note)

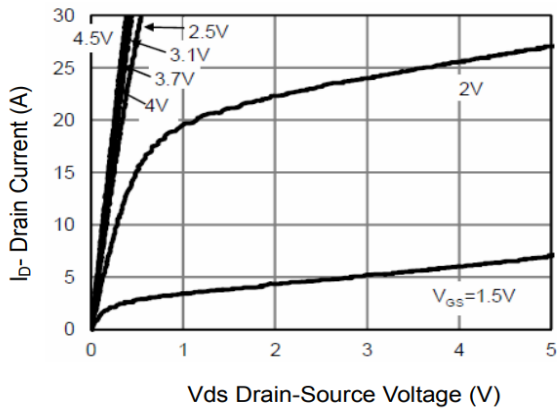


Figure 1 Output Characteristics

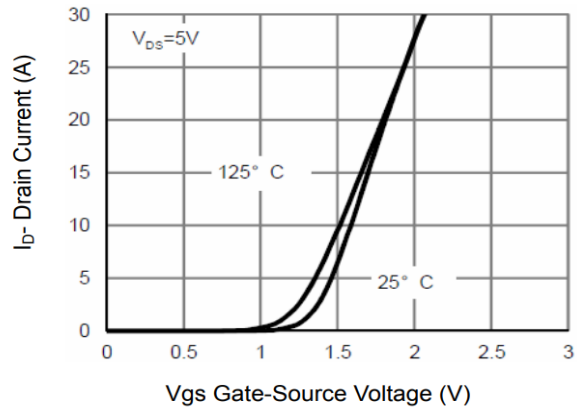


Figure 2 Transfer Characteristics

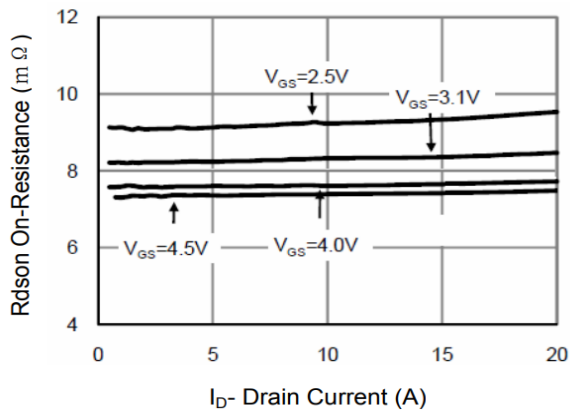


Figure 3 Rdson- Drain Current

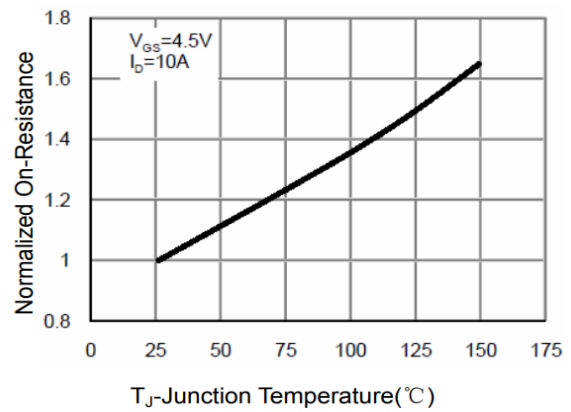


Figure 4 Rdson-Junction Temperature

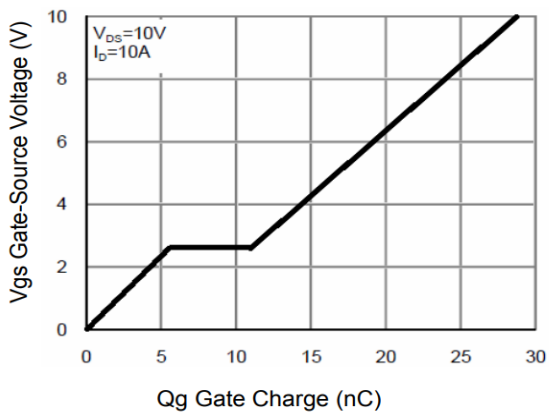


Figure 5 Gate Charge

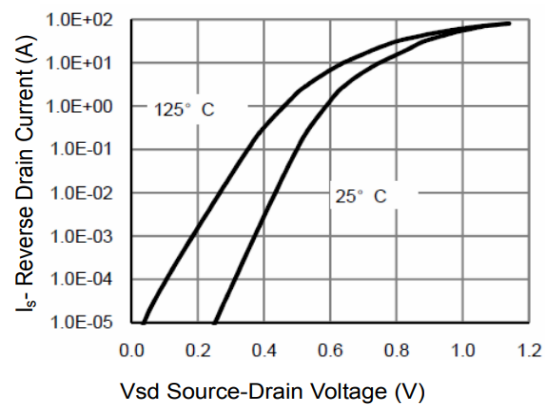


Figure 6 Source- Drain Diode Forward

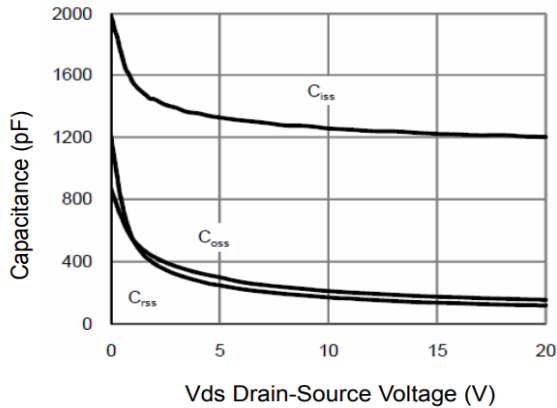


Figure 7 Capacitance vs Vds

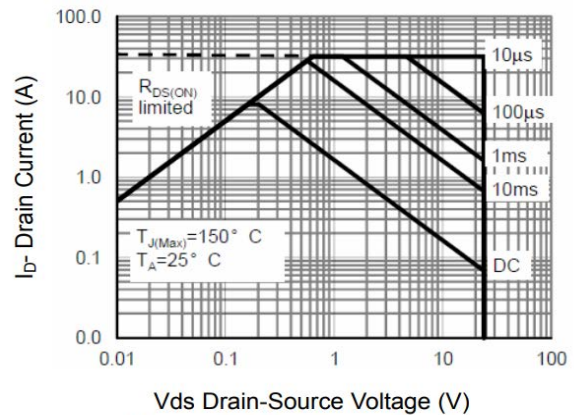


Figure 8 Safe Operation Area

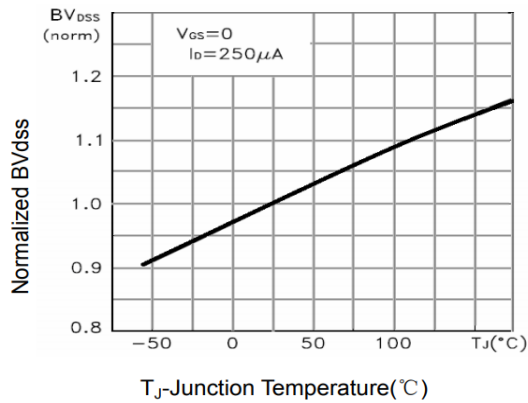


Figure 9 BV_{DSS} vs Junction Temperature

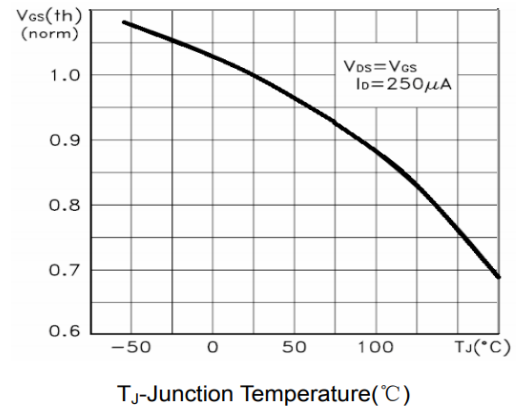


Figure 10 V_{GS(th)} vs Junction Temperature

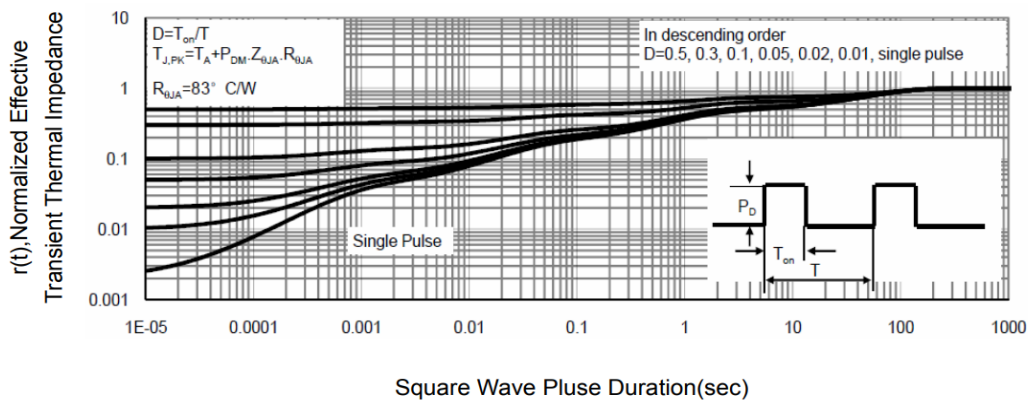
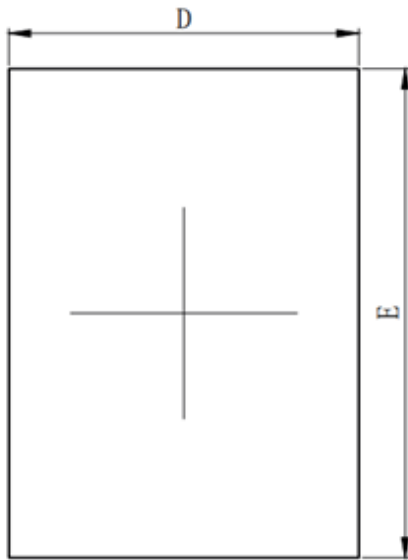
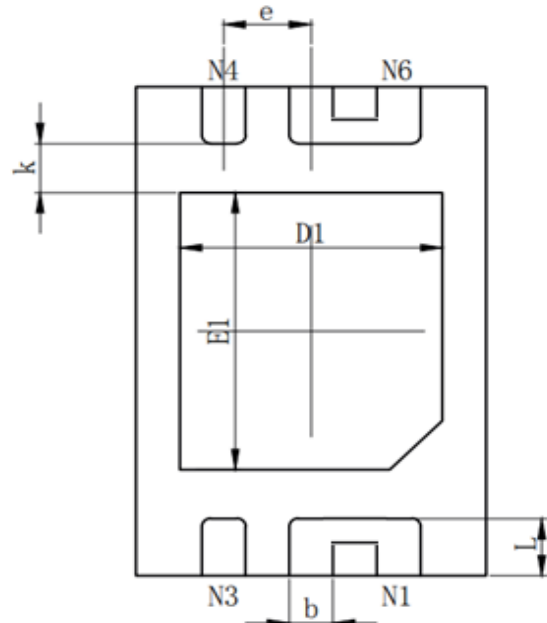


Figure 11 Normalized Maximum Transient Thermal Impedance

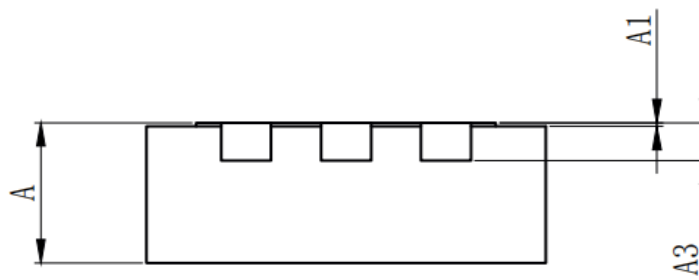
DFN2*3-6L PACKAGE OUTLINE DIMENSIONS



TOPVIEW



BOTTOMVIEW



SIDEVIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
D	1.95	2.050	0.077	0.081
E	2.950	3.050	0.116	0.120
D1	1.450	1.550	0.057	0.061
E1	1.650	1.750	0.065	0.069
k	0.200MIN		0.008MIN	
b	0.200	0.300	0.008	0.012
e	0.500TYP		0.020TYP	
L	0.300	0.400	0.012	0.016