

30V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	320mΩ@4.5V	0.6A
	410mΩ@2.5V	

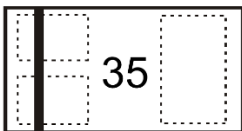
Feature

- Surface Mount Package
- N-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- AEC-Q101 qualified (Automotive grade with suffix " Q ")
- Expsemi technology

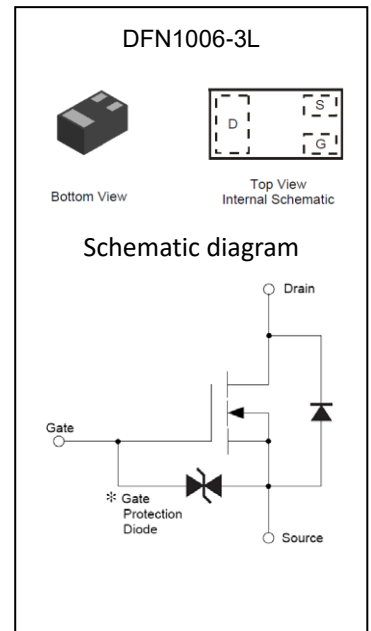
Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

MARKING:



Top View
Bar Denotes Gate
and Source Side



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	0.6	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	1.8	A
Power Dissipation ⁽²⁾	P_D	100	mW
Thermal Resistance from Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	1250	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

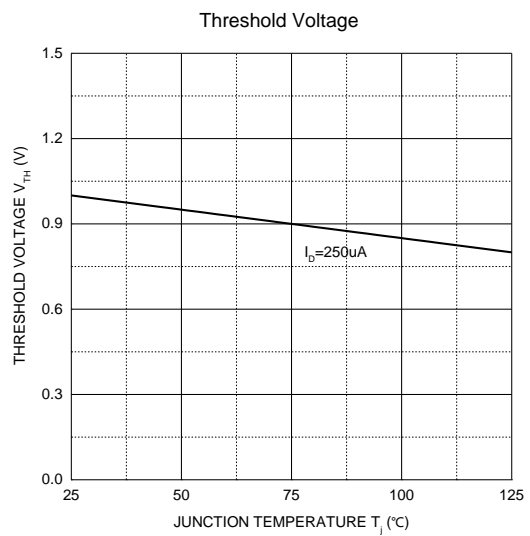
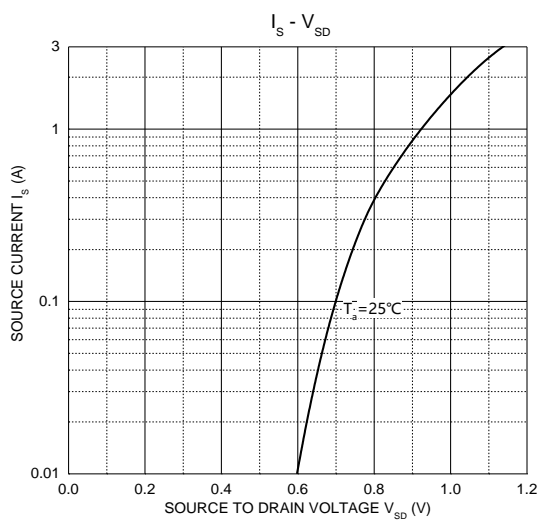
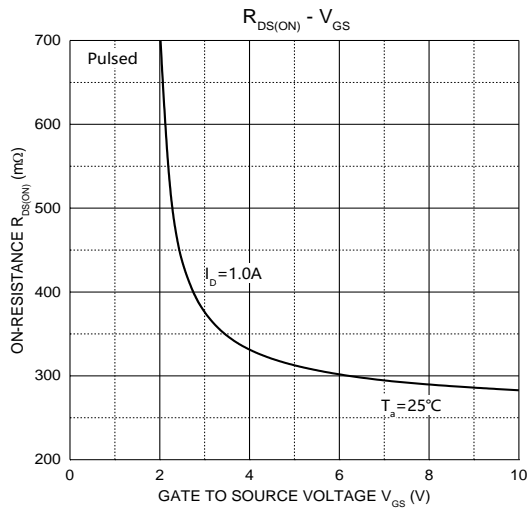
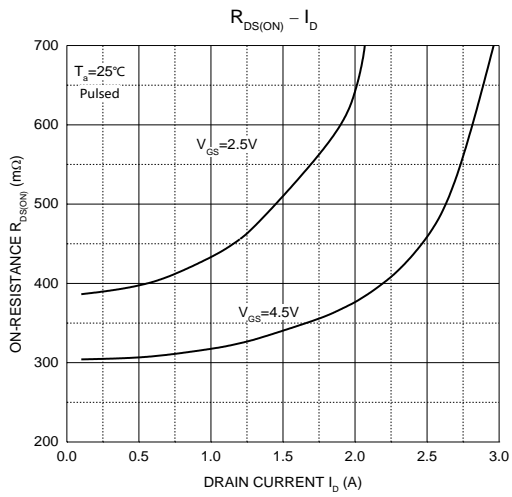
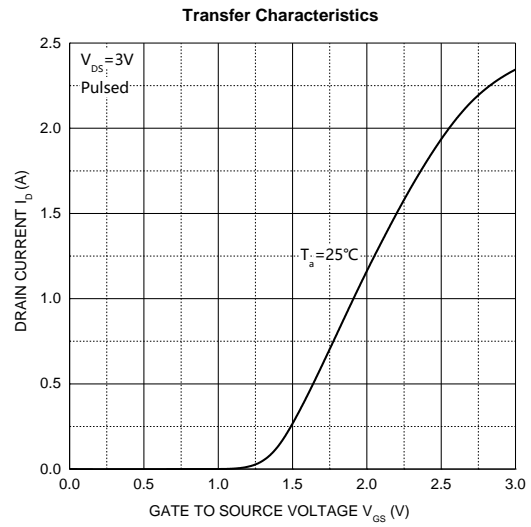
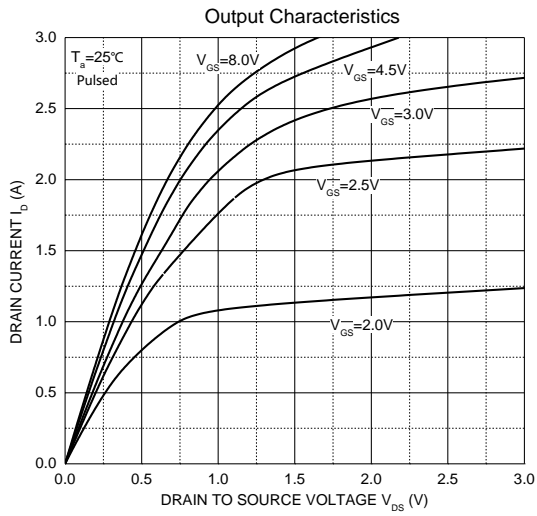
MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V			±3	μA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.5	1.0	1.5	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} = 4.5V, I _D = 0.6A		320	500	mΩ
		V _{GS} = 2.5V, I _D = 0.3A		410	600	
Forward tranconductance	g _{FS}	V _{DS} = 5V, I _D = 0.5A	0.1			S
Dynamic characteristics⁽⁴⁾						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		44		pF
Output Capacitance	C _{oss}			15		
Reverse Transfer Capacitance	C _{rss}			8		
Total gate charge	Q _g	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 0.8A		1.2		nC
Gate-source charge	Q _{gs}			0.28		
Gate-drain charge	Q _{gd}			0.3		
Switching Characteristics⁽⁴⁾						
Turn-on delay time	t _{d(on)}	V _{DS} = 15V, I _D = 0.7A, V _{GS} = 4.5V, R _G = 51Ω		5.0		ns
Turn-on rise time	t _r			8.2		
Turn-off delay time	t _{d(off)}			23		
Turn-off fall time	t _f			41		
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	I _S = 0.6A, V _{GS} = 0V		0.87	1.2	V

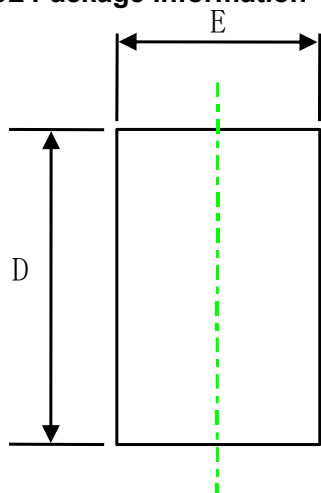
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at T_a = 25°C.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.
4. These parameters have no way to verify.

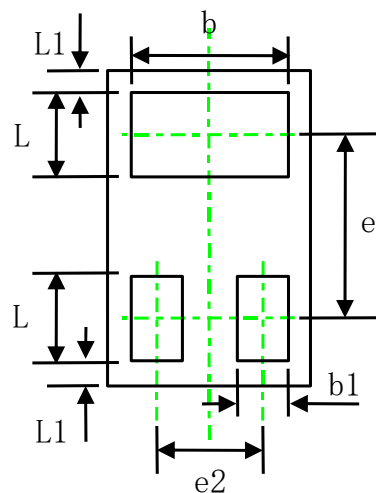
Typical Electrical and Thermal Characteristics



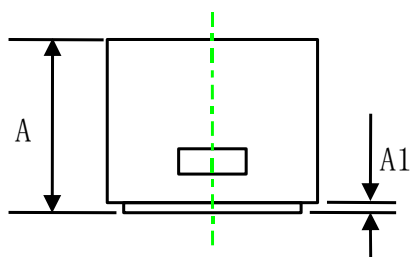
DFN1006-3L Package Information



TOP VIEW
[顶视图]



BOTTOM VIEW
[底视图]



SIDE VIEW
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b	0.400	0.600	0.016	0.024
e	0.65 TYP		0.026 TYP	
e2	0.35 TYP		0.014 TYP	
L1	0.05 REF		0.002 REF	
L	0.200	0.300	0.008	0.012
b1	0.100	0.200	0.004	0.008