

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	1.6Ω@10V	0.5A
	2Ω@4.5V	

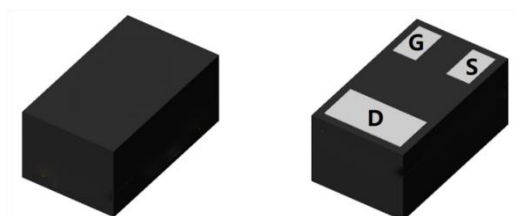
Feature

- Advanced trench technology
- Excellent $R_{DS(ON)}$
- Low gate charge
- ESD protected

Application

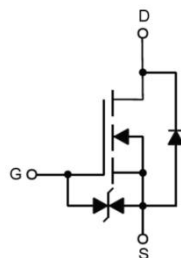
- Load switch
- Uninterruptible power supply

Package

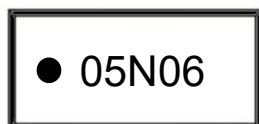


DFN1006-3L

Circuit diagram



Marking



Absolute maximum ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁾ ($V_{GS}=10\text{V}$)	I_D	0.5	A
Continuous Drain Current ¹⁾ ($V_{GS}=10\text{V}$, $T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	0.13	A
Pulsed Drain Current ²⁾	I_{DM}	1.5	A
Single Pulse Avalanche Energy	E_{AS}	1	mJ
Power Dissipation ³⁾	P_D	0.35	W
Thermal Resistance Junction to Ambient ¹⁾	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.3	2	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =0.3A		1.1	1.6	Ω
		V _{GS} =4.5V, I _D =0.2A		1.3	2	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		25		pF
Output Capacitance	C _{oss}			5.6		
Reverse Transfer Capacitance	C _{rss}			2.2		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =4.5V, I _D =0.3A		0.61		nC
Gate-Source Charge	Q _{gs}			0.27		
Gate-Drain Charge	Q _{gd}			0.23		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =0.3A R _G =3Ω		4.3		nS
Turn-on rise time	t _r			2.4		
Turn-off delay time	t _{d(off)}			21		
Turn-off fall time	t _f			14.5		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				0.5	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =0.3A			1.5	V

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) The power dissipation is limited by 150°C junction temperature.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

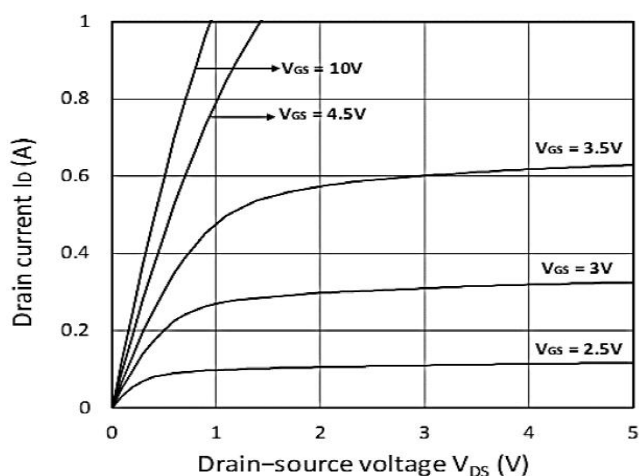


Figure 1. Output Characteristics

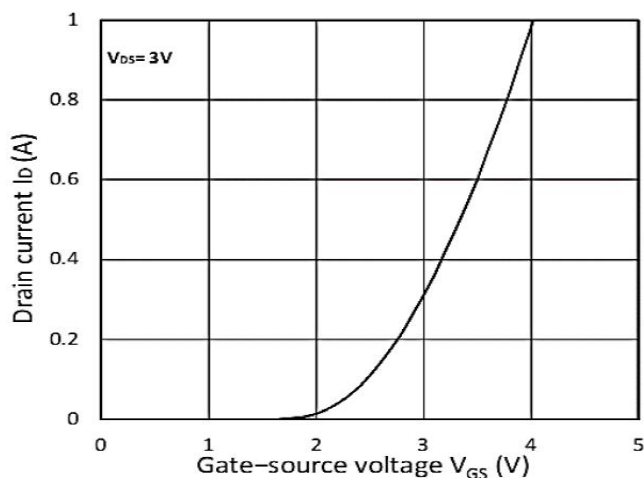


Figure 2. Transfer Characteristics

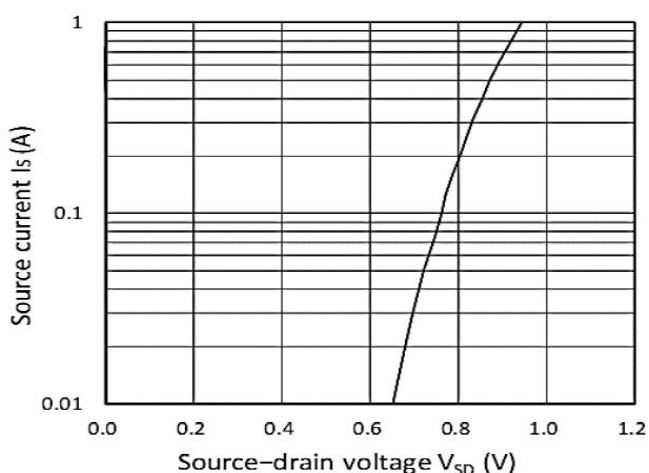


Figure 3. Forward Characteristics of Reverse

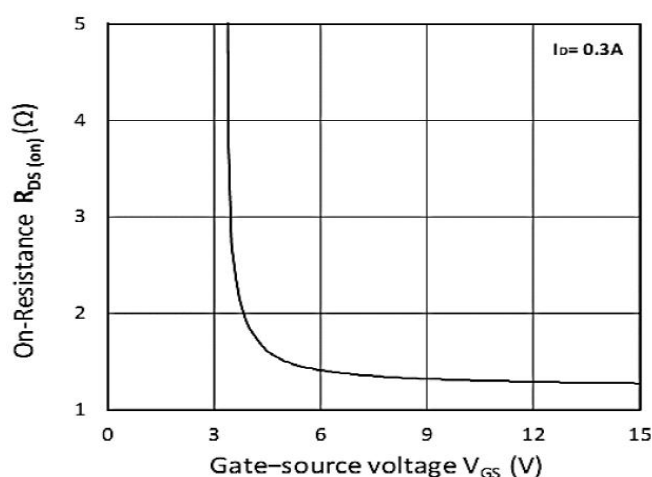


Figure 4. R_DS(ON) vs. V_GS

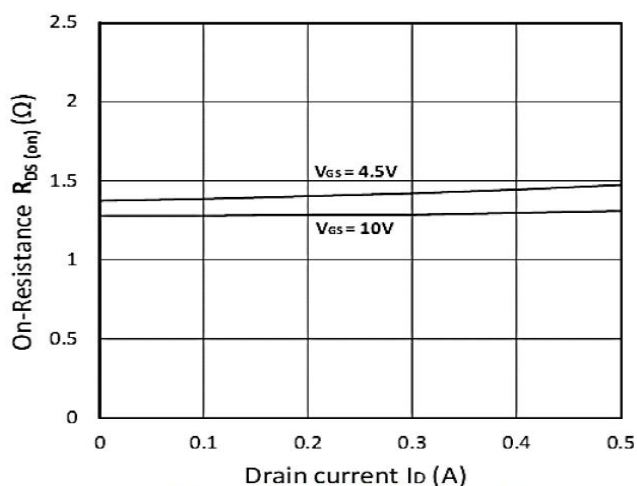


Figure 5. R_DS(ON) vs. I_D

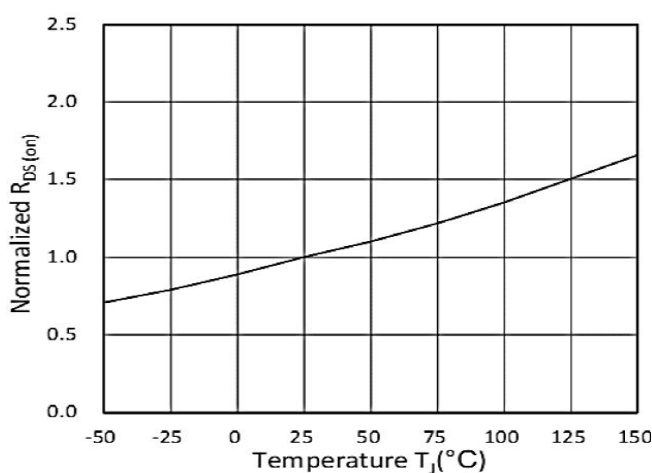


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

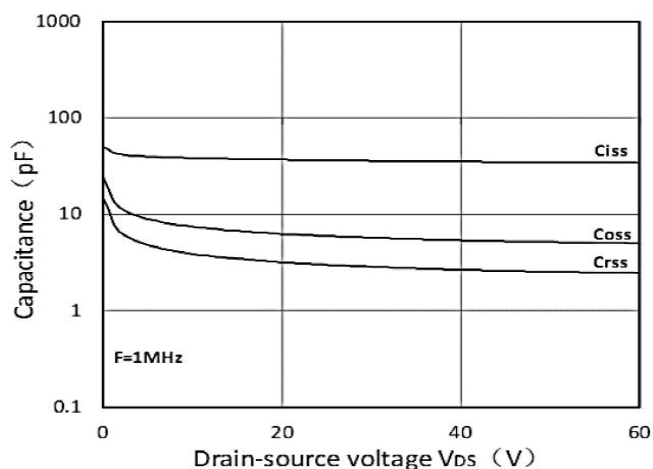


Figure 7. Capacitance Characteristics

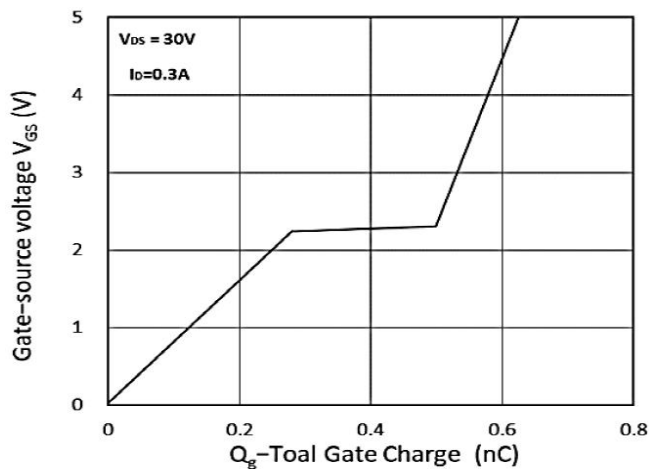


Figure 8. Gate Charge Characteristics

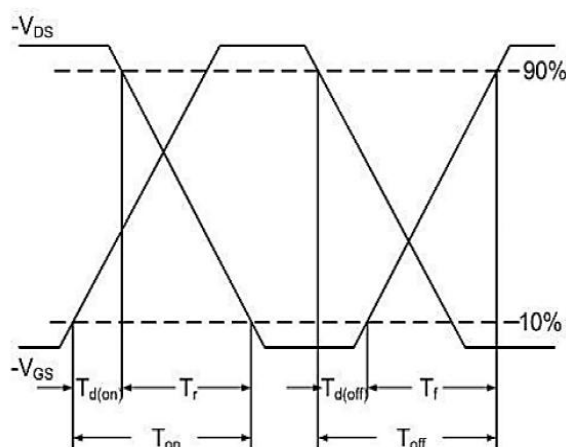


Figure.9 Switching Time Waveform

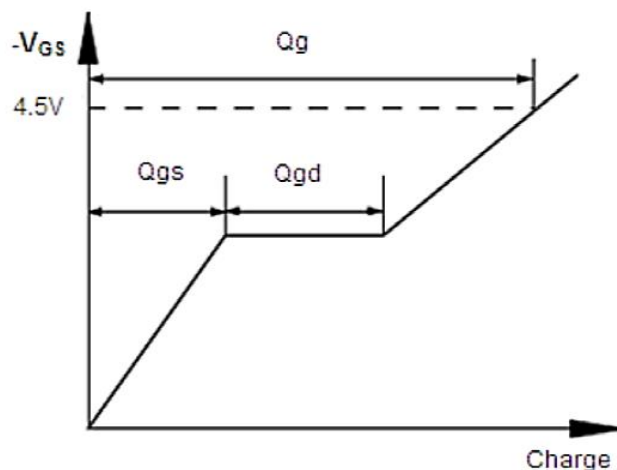
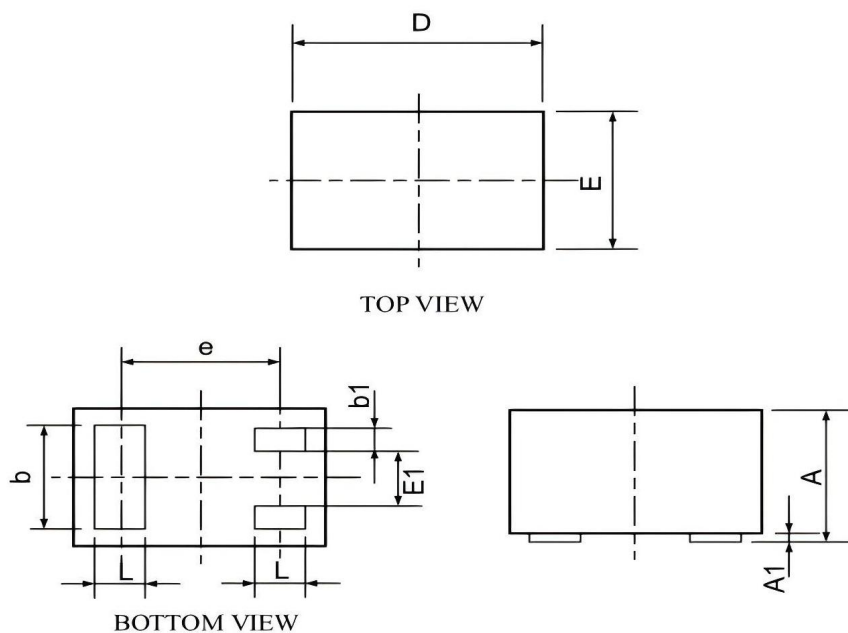


Figure.10 Gate Charge Waveform

DFN1006-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.000	0.050	0.000	0.002
b	0.400	0.600	0.016	0.024
b1	0.080	0.150	0.003	0.006
D	0.950	1.050	0.037	0.041
e	0.650 BSC.		0.026 BSC.	
E	0.550	0.650	0.022	0.026
E1	0.190 BSC.		0.007 BSC.	
L	0.200	0.300	0.008	0.012