

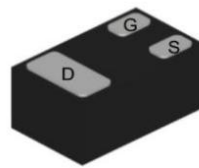
N-Channel Enhancement Mode MOSFET

Features

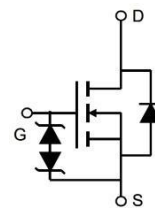
- $V_{DS} = 30V$
- $I_D = 1.0A$
- $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) $= 220m\Omega$ (Typ)
- $R_{DS(ON)}$ (at $V_{GS} = 2.5V$) $= 245m\Omega$ (Typ)
- ESD Capability (HBM): 2KV



Top View



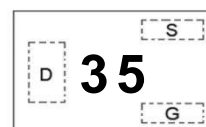
Bottom View



DFN1006-3L

Application

- Load Switch for Portable Devices
- Voltage controlled small signal switch



35 =Marking

Absolute Maximum Ratings (at $T_a = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	1.0	A
Peak Drain Current, Pulsed ¹⁾	I_{DM}	4.2	A
Power Dissipation ²⁾	P_{tot}	0.7	W
Operating Junction	T_J	-55~150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	175	$^\circ C/W$

Note:

¹⁾ Pulse width $\leq 100\mu s$, duty cycle $\leq 1\%$, limited by T_{Jmax}

²⁾ Device mounted on FR-4 substrate PC board, 2ozcopper, with 1-inch square copper plate in still air.

Characteristics at $T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $I_D = 250\ \mu\text{A}$	BV_{DSS}	30			V
Drain-Source Leakage Current at $V_{DS} = 30\ \text{V}$	I_{DSS}			1	μA
Gate Leakage Current at $V_{GS} = \pm 12\ \text{V}$	I_{GSS}			± 10	μA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	0.6	0.9	1.5	V
Drain-Source On-State Resistance at $V_{GS} = 4.5\ \text{V}$, $I_D = 1.0\ \text{A}$ at $V_{GS} = 2.5\ \text{V}$, $I_D = 0.8\ \text{A}$ at $V_{GS} = 1.8\ \text{V}$, $I_D = 0.6\ \text{A}$	$R_{DS(on)}$		220 245 290	280 320 500	$\text{m}\Omega$
DYNAMIC PARAMETERS					
Forward Transconductance at $V_{DS} = 10\ \text{V}$, $I_D = 800\ \text{mA}$	g_{fs}	1.0			S
Input Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 10\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}		49		pF
Output Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 10\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}		20		pF
Reverse Transfer Capacitance at $V_{GS} = 0\ \text{V}$, $V_{DS} = 10\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}		12		pF
Gate charge total at $V_{DS} = 10\ \text{V}$, $I_D = 1\ \text{A}$, $V_{GS} = 4.5\ \text{V}$	Q_g		2.1		nC
Gate to Source Charge at $V_{DS} = 10\ \text{V}$, $I_D = 1\ \text{A}$, $V_{GS} = 4.5\ \text{V}$	Q_{gs}		0.7		nC
Gate to Drain Charge at $V_{DS} = 10\ \text{V}$, $I_D = 1\ \text{A}$, $V_{GS} = 4.5\ \text{V}$	Q_{gd}		0.42		nC
Turn-On Delay Time at $V_{GS} = 4.5\ \text{V}$, $V_{DS} = 10\ \text{V}$, $I_D = 0.5\ \text{A}$, $R_g = 10\ \Omega$	$t_{d(on)}$		5.7		ns
Turn-On Rise Time at $V_{GS} = 4.5\ \text{V}$, $V_{DS} = 10\ \text{V}$, $I_D = 0.5\ \text{A}$, $R_g = 10\ \Omega$	t_r		4.2		ns
Turn-Off Delay Time at $V_{GS} = 4.5\ \text{V}$, $V_{DS} = 10\ \text{V}$, $I_D = 0.5\ \text{A}$, $R_g = 10\ \Omega$	$t_{d(off)}$		15.3		ns
Turn-Off Fall Time at $V_{GS} = 4.5\ \text{V}$, $V_{DS} = 10\ \text{V}$, $I_D = 0.5\ \text{A}$, $R_g = 10\ \Omega$	t_f		6.4		ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_F = 150\ \text{mA}$, $V_{GS} = 0\ \text{V}$	V_{DS}			1.2	V
Body Diode Reverse Recovery Time at $I_F = 1.0\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	t_{rr}		7.5		ns
Body Diode Reverse Recovery Charge at $I_F = 1.0\ \text{A}$, $di/dt = 100\ \text{A} / \mu\text{s}$	Q_{rr}		2.5		nC

Electrical Characteristics Curves

Fig. 1 - Output Characteristics

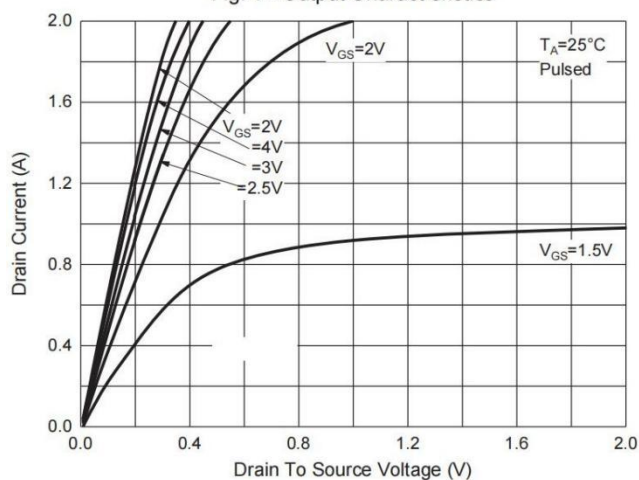


Fig. 2 - Transfer Characteristics

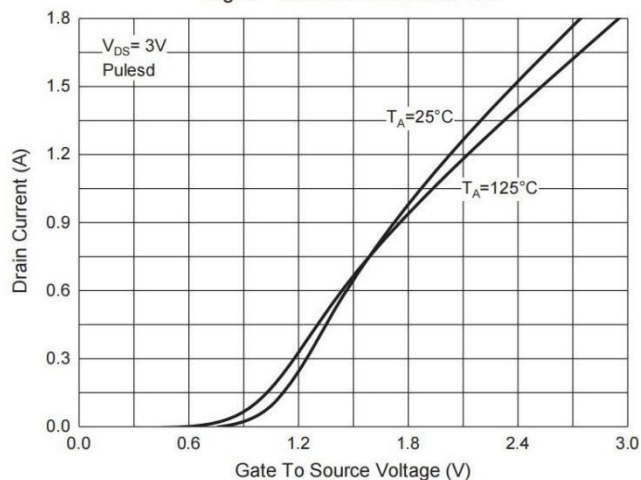


Fig. 3 - $R_{DS(ON)} - I_D$

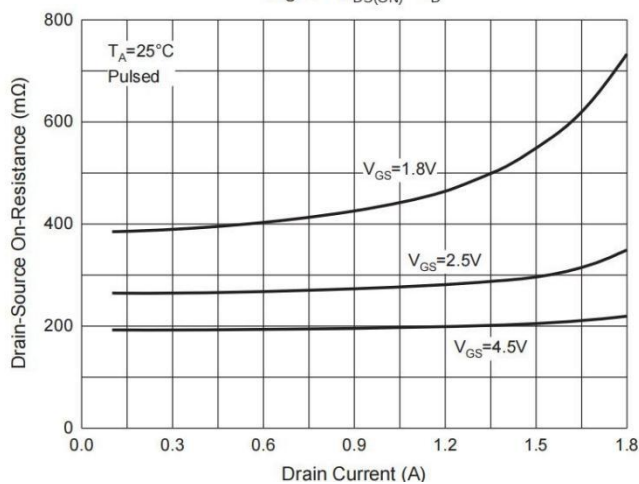


Fig. 4 - $R_{DS(ON)} - V_{GS}$

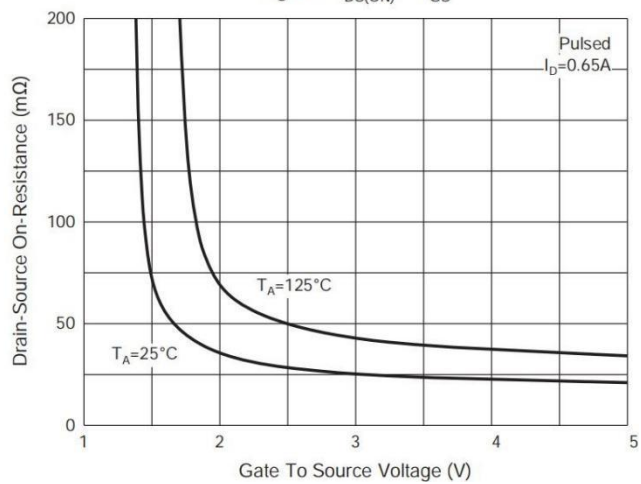


Fig. 5 - $I_S - V_{SD}$

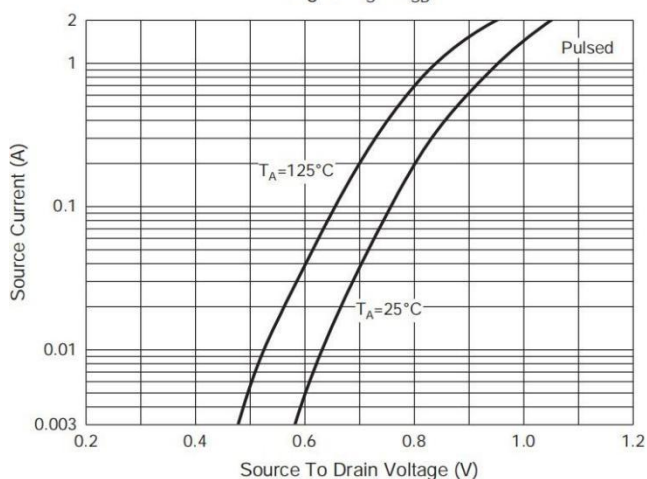
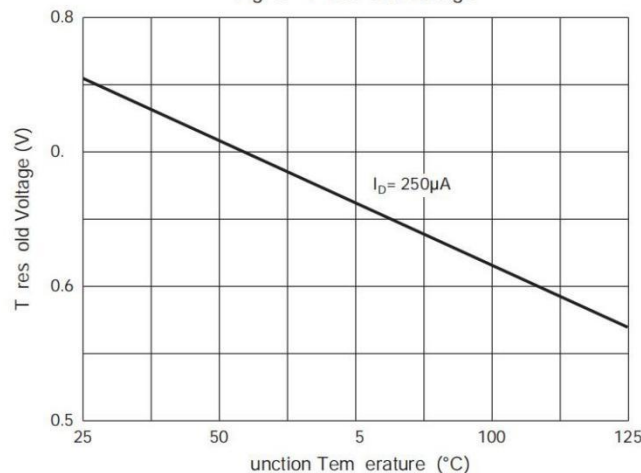


Fig. 6 - Threshold Voltage



Test Circuits

Fig.1-1 Switching times test circuit

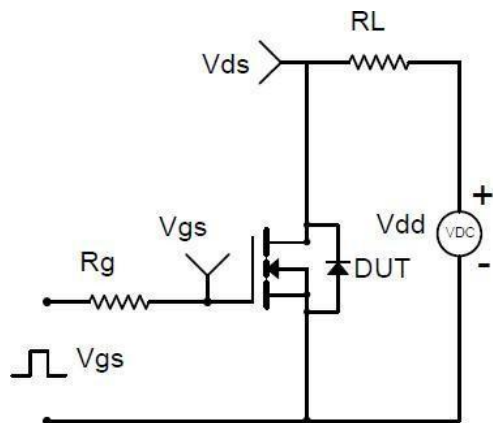


Fig.1-2 Switching Waveform

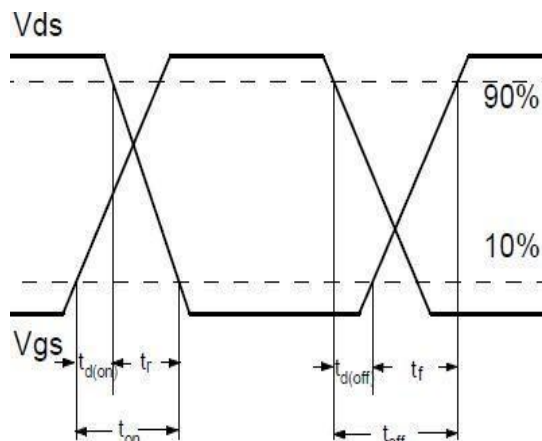


Fig.2-1 Gate charge test circuit

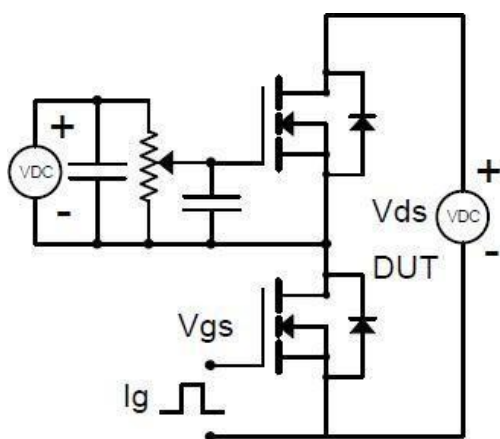


Fig.2-2 Gate charge waveform

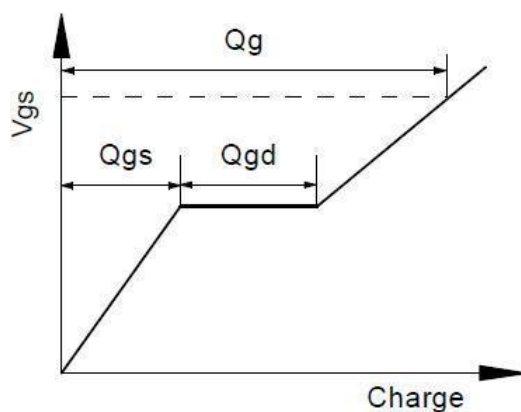


Fig.3-1 Avalanche test circuit

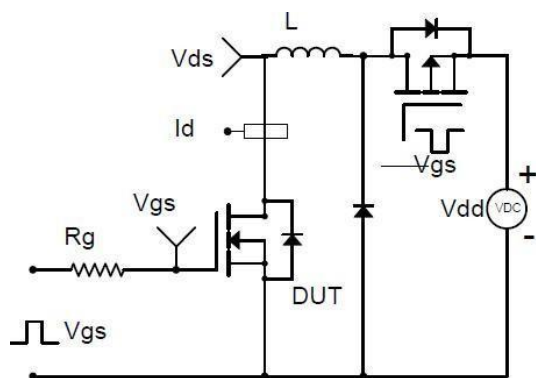
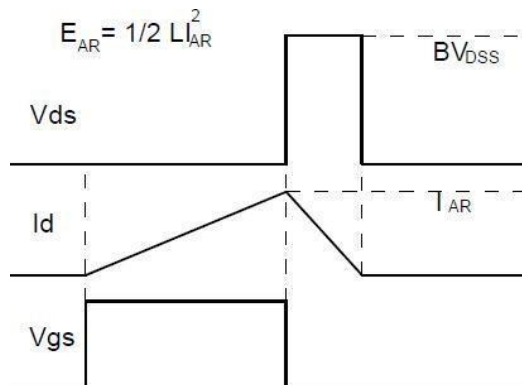
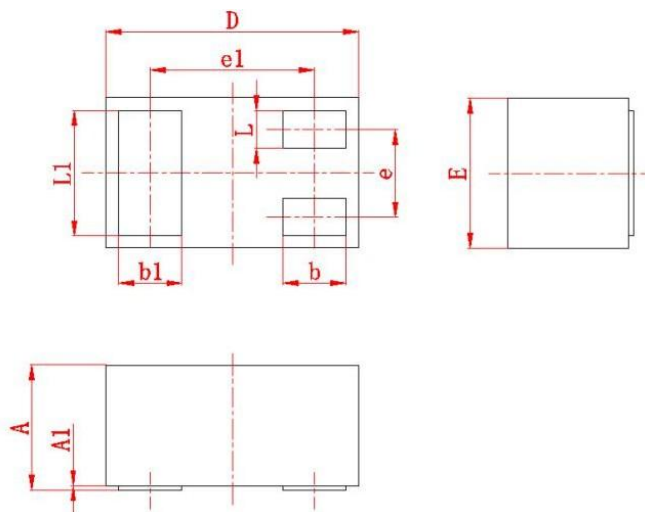


Fig.3-2 Avalanche waveform



DFN1006-2L



符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
A	0.4	0.5	e	(0.35)		L	0.1	0.2
A1	0	0.05	e1	(0.65)		L1	0.45	0.55
D	0.9	1.1	b	0.2	0.3			
E	0.55	0.65	b1	0.2	0.3			