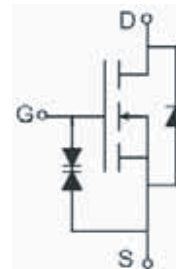


Features

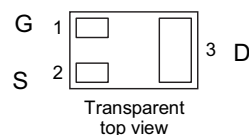
- $V_{DS} = 60V, I_D = 0.35A$
 $R_{DS(ON)} < 3.2\Omega @ V_{GS}=5V$
 $R_{DS(ON)} < 2.8\Omega @ V_{GS}=10V$
- ESD Rating HBM 2300V
- Logic-level compatible
- High fast switching



Schematic diagram

Application

- Direct logic-level interface: TTL/CMOS
- Drivers: relays, solenoids, lamps, hammers, display, memories, transistors, etc.
- Switching circuits
- Solid-state relays
- Halogen-free



DFN1006-3 (SOT883)

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ($T_J = 150^\circ\text{C}$)	$T_A = 25^\circ\text{C}$	I_D	0.35	A
	$T_A = 100^\circ\text{C}$		0.2	
Drain Current-Pulsed (Note 1)		I_{DM}	0.8	A
Maximum Power Dissipation		P_D	0.35	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	360(max)	W/ $^\circ\text{C}$
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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	60	68	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V,V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V,V _{DS} =0V	-	±100	±500	nA
		V _{GS} =±20V,V _{DS} =0V	-	±4	±10	uA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250μA	1	1.7	1.9	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =5V, I _D =0.2A	-	2.5	3.2	Ω
		V _{GS} =10V, I _D =0.2A	-	2.2	2.8	Ω
Forward Transconductance	g _{FS}	V _{DS} =10V,I _D =0.2A	0.1	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =25V,V _{GS} =0V, F=1.0MHz	-	21	50	PF
Output Capacitance	C _{oss}		-	5	10	PF
Reverse Transfer Capacitance	C _{rss}		-	4.2	5	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V,I _D =0.2A V _{GS} =10V,R _{GEN} =10Ω	-	2.7	-	nS
Turn-on Rise Time	t _r		-	19	-	nS
Turn-Off Delay Time	t _{d(off)}		-	15	-	nS
Turn-Off Fall Time	t _f		-	23	-	nS
Total Gate Charge	Q _g	V _{DS} =30V,I _D =0.2A, V _{GS} =10V	-	3	5	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =0.2A	-	-	1.3	V
Diode Forward Current (Note 2)	I _S		-	-	0.2	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

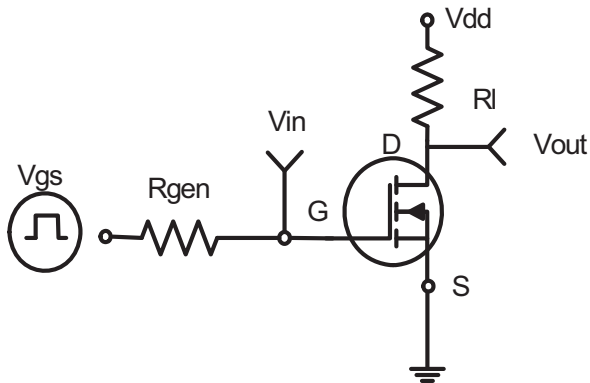


Figure 1: Switching Test Circuit

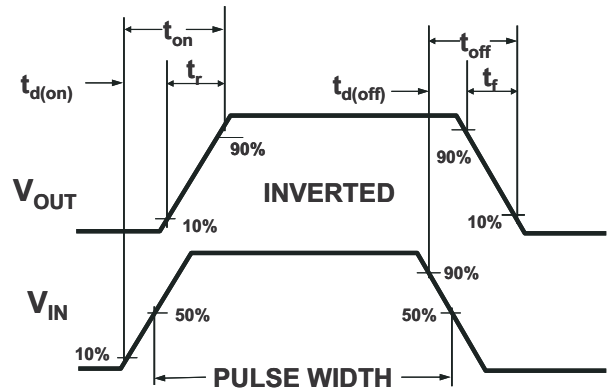


Figure 2: Switching Waveforms

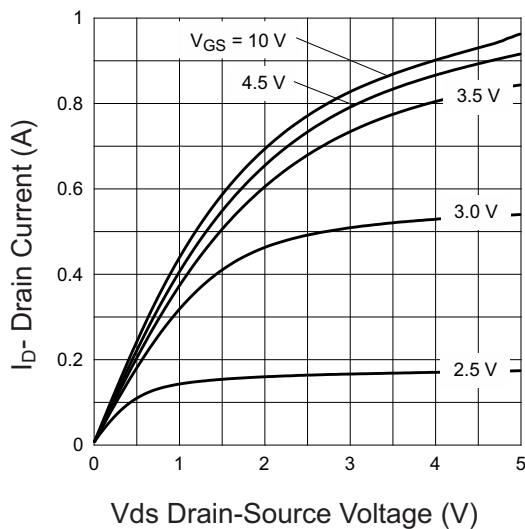


Figure 3 Output Characteristics

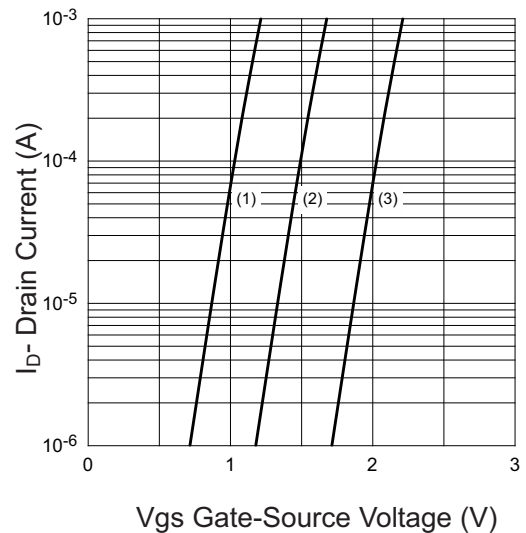


Figure 4 Transfer Characteristics

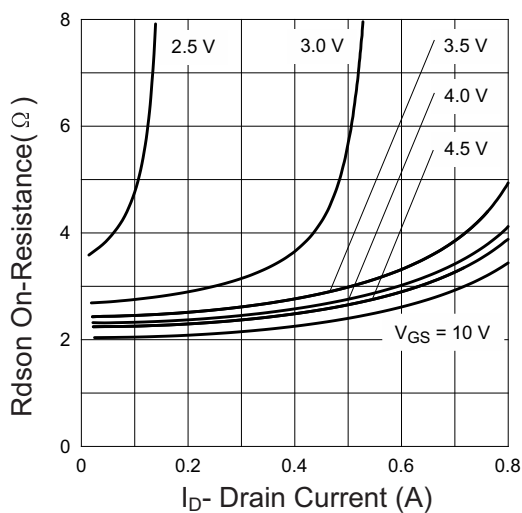


Figure 5 Drain-Source On-Resistance

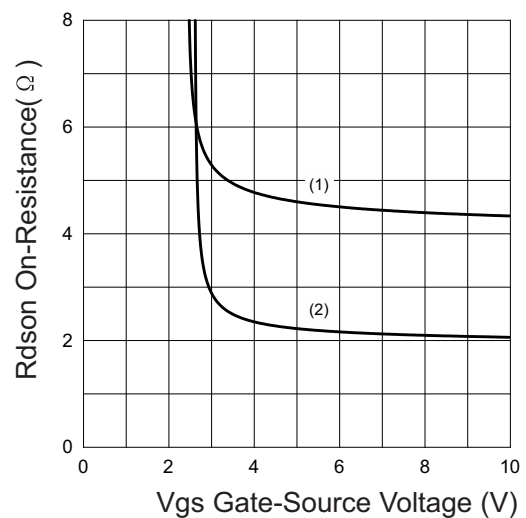


Figure 6 Rdson vs Vgs

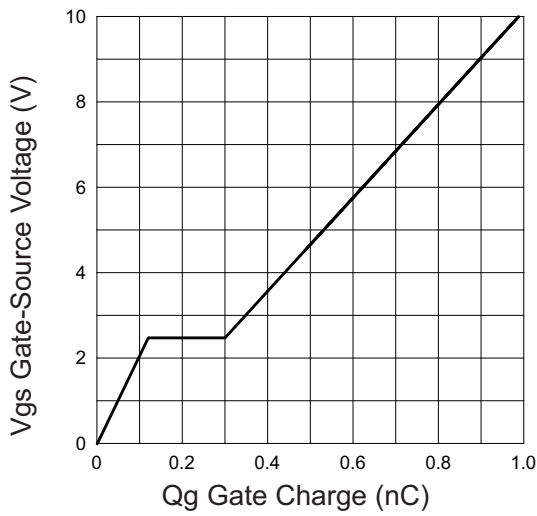


Figure 7 Gate Charge

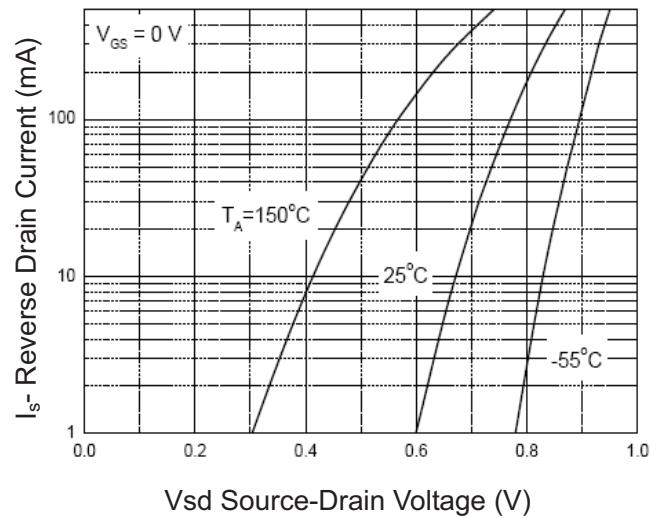


Figure 8 Source-Drain Diode Forward

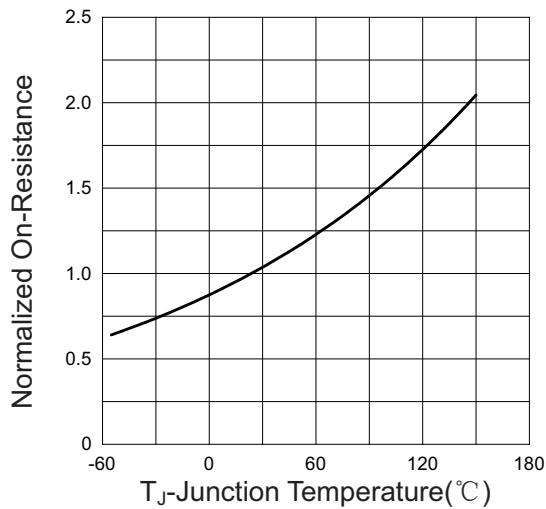


Figure 9 Drain-Source On-Resistance

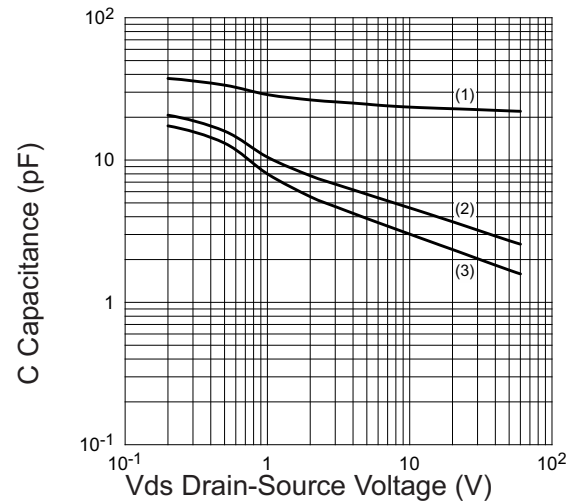


Figure 10 Capacitance vs Vds

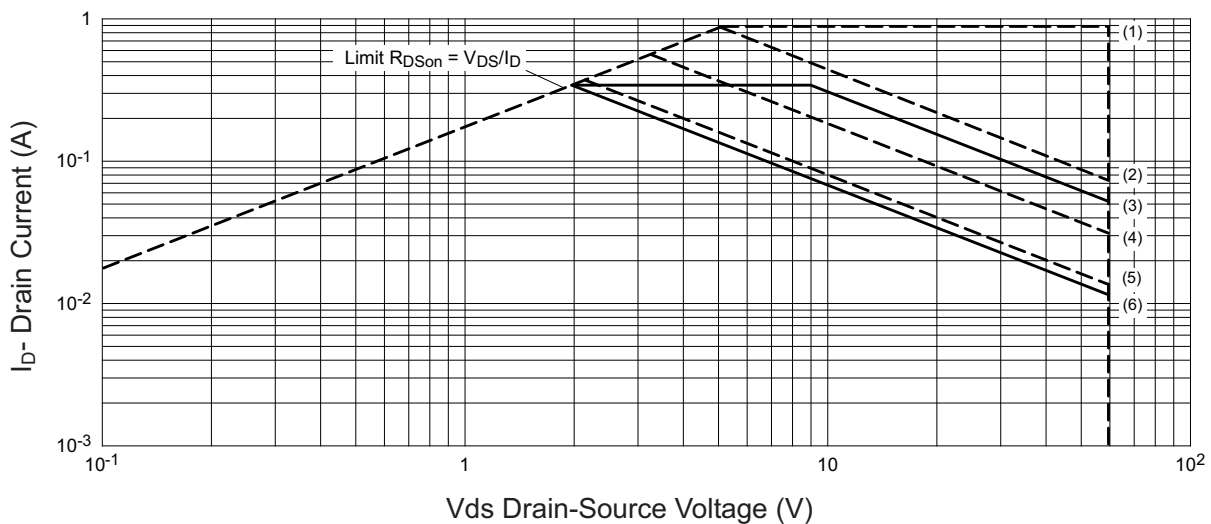
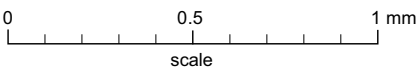
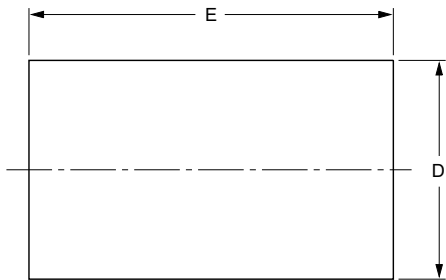
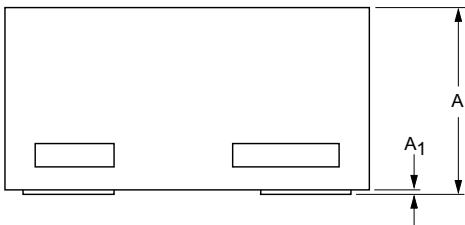
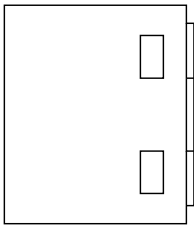
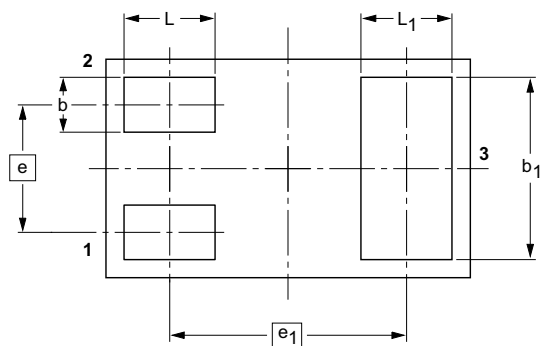


Figure 11 Safe Operation Area

DFN1006 Package Information



DIMENSIONS (mm are the original dimensions)

UNIT	A ⁽¹⁾	A ₁ max.	b	b ₁	D	E	e	e ₁	L	L ₁
mm	0.50 0.46	0.03	0.20 0.12	0.55 0.47	0.62 0.55	1.02 0.95	0.35	0.65	0.30 0.22	0.30 0.22