iM1101



N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design
- ☑ Extremely low threshold voltage

1.2 Applications

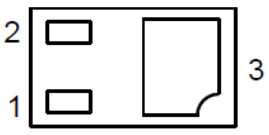
- ☑ Portable appliances

1.3 Quick reference

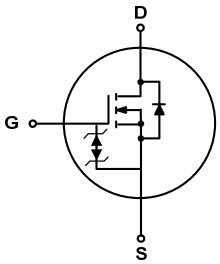
- ☑ BV ≧ 20 V
- ☑ P_{tot} ≦ 1.25 W
- ☑ I_D ≦ 1.2 A
- ☑ $R_{DS(ON)}$ ≦500 mΩ @ V_{GS} = 4.5 V
- ☑ $R_{DS(ON)}$ ≦700 mΩ @ V_{GS} = 2.5 V
- ☑ $R_{DS(ON)}$ ≦900 mΩ @ V_{GS} = 1.8 V
- ☑ $R_{DS(ON)}$ ≦1800 mΩ @ V_{GS} = 1.5 V

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2	Source(S)		
3	Drain(D)		



Bottom View
DFN1006-3L





3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A = 25 ℃	-	20	V
V_{GS}	Gate-Source Voltage	T_A = 25 ℃	-	± 10	V
I_D*	Drain Current	T_A = 25 ℃, V_{GS} = 10 V	-	1.2	A
		T_A = 100 ℃, V_{GS} = 10 V	-	0.76	A
I_{DM}*,**,***	Pulsed Drain Current	T_A = 25 ℃, V_{GS} = 10 V	-	4	A
P_{tot}*	Total Power Dissipation	T_A = 25 ℃	-	1.25	W
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Diode Forward Current	T_A = 25 ℃	-	1.2	A
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	100	℃ / W

Notes：

* Surface Mounted on 1 in2 pad area, t ≤ 10 sec

** Pulse width ≤ 300 μs, duty cycle ≤ 2 %

*** Limited by bonding wire

4. Marking Information

Product Name	Marking
iM1101	01XX X : Date Code

5. Ordering Code

iM1101



6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 µA	20	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 µA	0.4	-	1.0	V
I_{DSS}	Drain Leakage Current	V_{DS} = 16, V_{GS} = 0 V	-	-	1	uA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 10 V, V_{DS} = 0 V	-	-	± 10	µA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 4.5 V , I_{DS} = 0.5 A	-	400	500	mΩ
		V_{GS} = 2.5 V, I_{DS} = 0.2 A	-	530	700	
		V_{GS} = 1.8 V, I_{DS} = 0.1 A	-	650	900	
		V_{GS} = 1.5 V, I_{DS} = 0.05 A	-	800	1800	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 0.5 A, V_{GS} = 0 V	-	-	1.1	V
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 10 V Frequency = 1 MHz	-	31	-	pF
C_{oss}	Output Capacitance		-	5.5	-	
C_{rss}	Reverse Transfer Capacitance		-	4.1	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 10 V, V_{GEN} = 4.5 V, R_G = 3.9 Ω, R_L = 20 Ω, I_{DS} = 0.5 A	-	5.5	-	nS
t_r	Turn-on Rise Time		-	4.6	-	
t_d(off)	Turn-off Delay Time		-	25	-	
t_f	Turn-off Fall Time		-	13	-	
Q_g	Total Gate Charge	V_{GS} = 4.5 V, V_{DS} = 10 V, I_{DS} = 0.5 A	-	0.8	-	nC
Q_{gs}	Gate-Source Charge		-	0.2	-	
Q_{gd}	Gate-Drain Charge		-	0.1	-	

Notes :

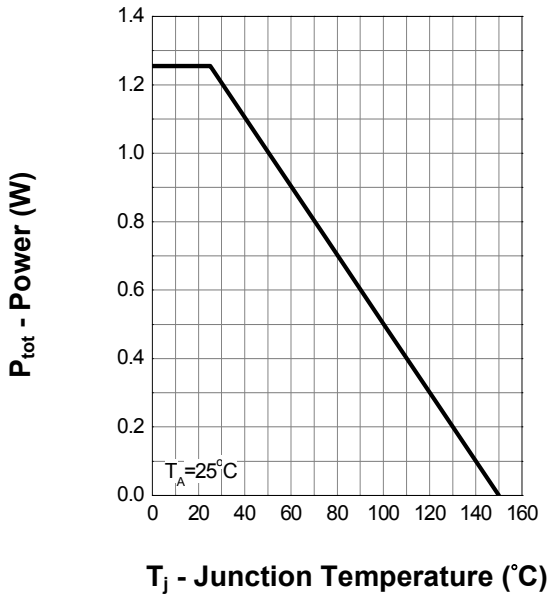
a : Pulse test ; pulse width ≤ 300 µs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

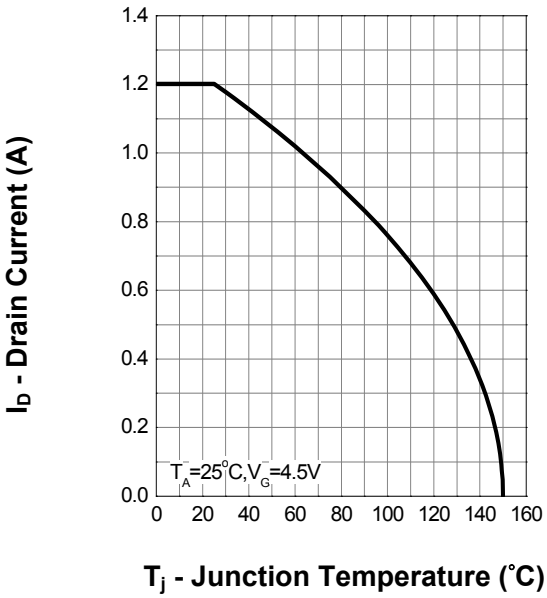


7. Typical Characteristics

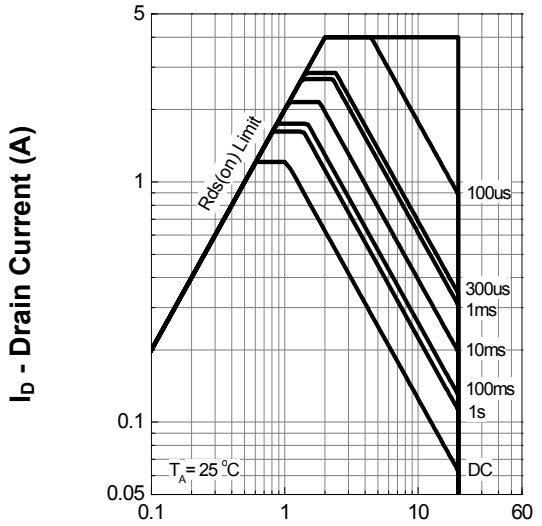
Power Dissipation



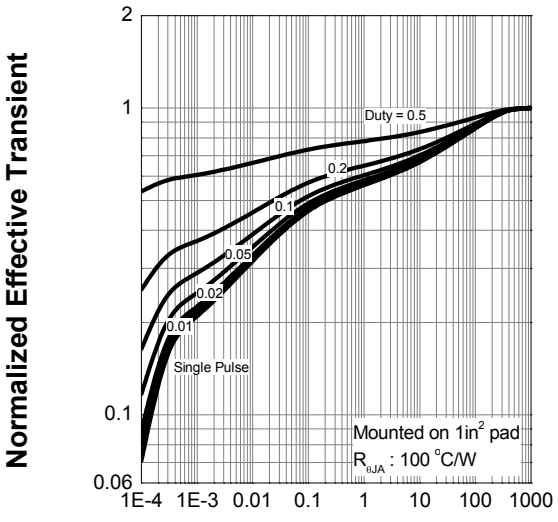
Drain Current



Safe Operation Area



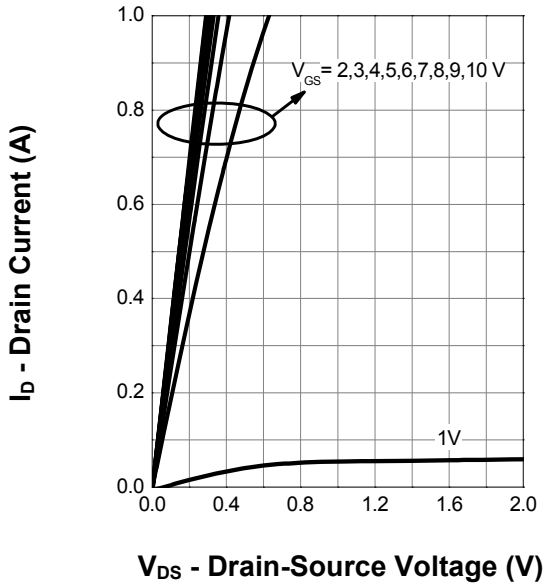
Thermal Transient Impedance



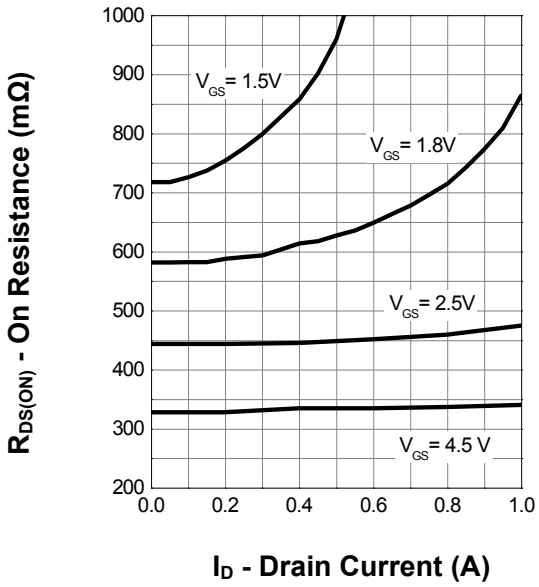


7. Typical Characteristics (cont.)

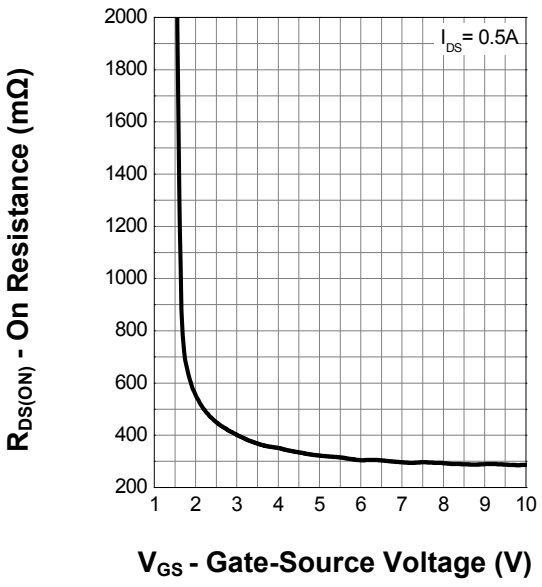
Output Characteristics



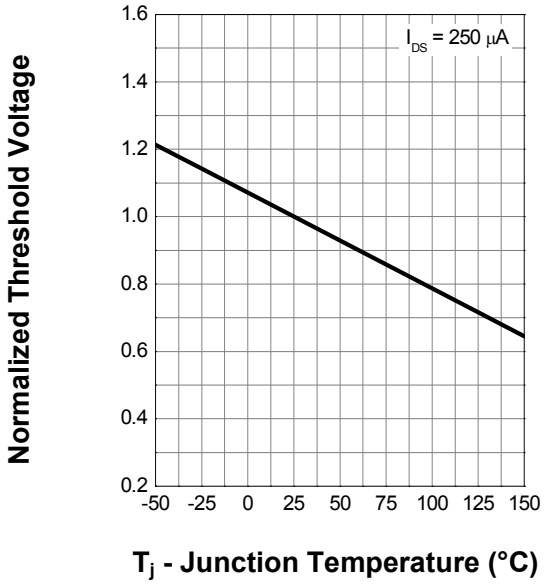
Drain-Source On Resistance



Transfer Characteristics



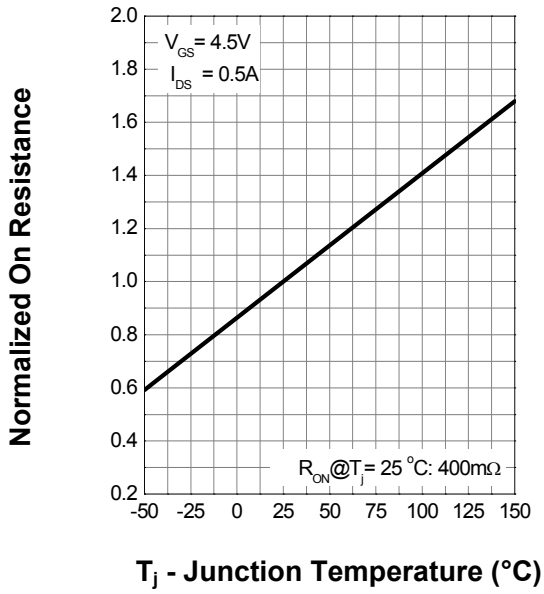
Gate Threshold Voltage



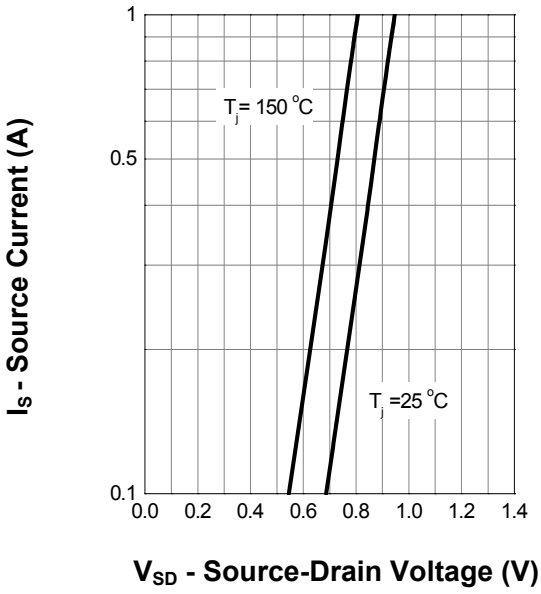


7. Typical Characteristics (cont.)

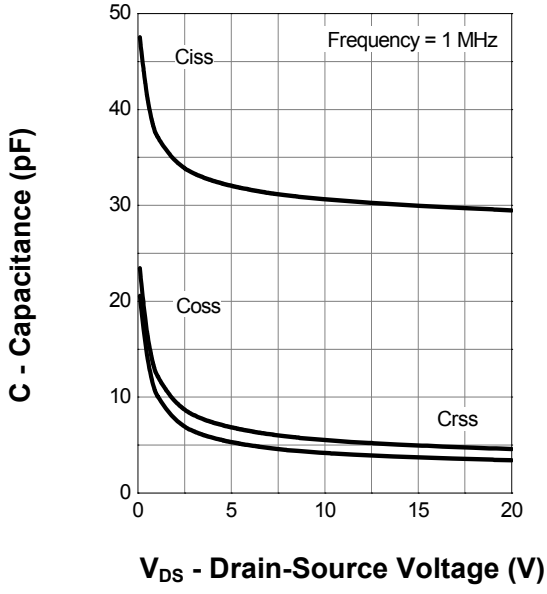
Drain-Source On Resistance



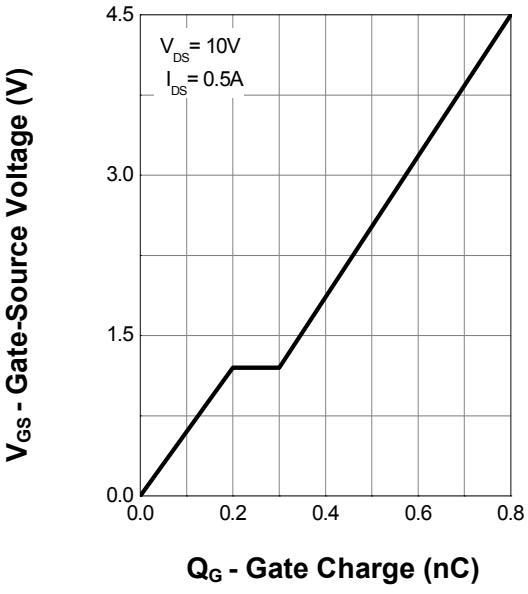
Source-Drain Diode Forward



Capacitance



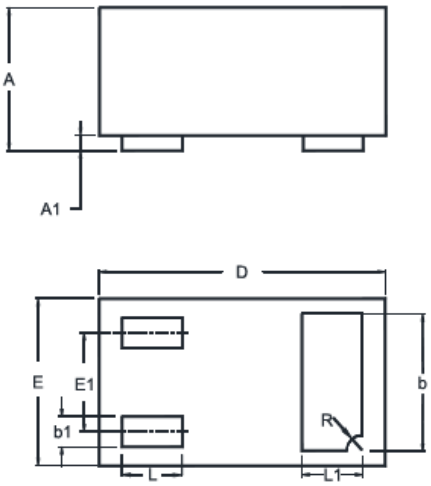
Gate Charge





8. Package Dimensions

DFN1006 Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	0.36	0.40
A1	0.05	
b	0.45	0.55
b1	0.1	0.2
D	0.95	1.05
E	0.55	0.65
E1	0.325	
L	0.2	0.3
L1	0.2	0.3
R	0.05	0.15