iM18129



N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design

1.2 Applications

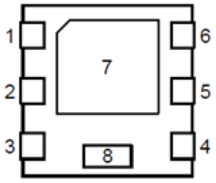
- ☑ Charging switch for portaple devices
- ☑ DC to DC Converters

1.3 Quick reference

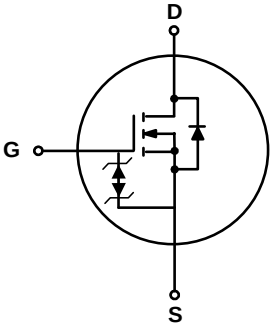
- ☑ BV ≧ 20 V
- ☑ P_{tot} ≦ 17.6 W
- ☑ I_D ≦ 12 A
- ☑ $R_{DS(ON)}$ ≦ 14 mΩ @ V_{GS} = 4.5 V
- ☑ $R_{DS(ON)}$ ≦ 18 mΩ @ V_{GS} = 2.5 V
- ☑ $R_{DS(ON)}$ ≦ 30 mΩ @ V_{GS} = 1.8 V

2. Pin Description

Pin	Description
1,2,5,6,7	Drain
3	Gate
4,8	Source



Top View
DFN2X2-6L





3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C = 25 ℃	-	20	V
V_{GS}	Gate-Source Voltage	T_C = 25 ℃	-	±12	V
I_D***	Drain Current (DC)	T_C = 25 ℃, V_{GS} = 10 V	-	12	A
		T_C = 100 ℃, V_{GS} = 10 V	-	12	A
I_{DM}**	Drain Current (Pulsed)	T_C = 25 ℃, V_{GS} = 10 V	-	48	A
P_{tot}	Drain power dissipation	T_C = 25 ℃	-	17.6	W
T_{stg}	Storage Temperature		-55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Continuous-Source Current	T_C = 25 ℃	-	12	A
E_{AS}	Single Pulsed Avalanche Energy	V_{DD}=20V , L=1.0mH	-	58	mJ
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	85	℃/W
$R_{\theta JC}$	Thermal Resistance- Junction to Case		-	7.1	

Notes：

* Surface Mounted on 1 in^2 pad area, t ≤ 10 sec

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

*** Limited by bonding wire

4. Marking Information

Product Name	Marking
iM18129	18129 XXXXX X : Date Code

5. Ordering Code

iM18129



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	0.5	-	1.0	V
I_{DSS}	Drain Leakage Current	V_{DS} = 16 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{GS} = 0 V, V_{GS} = ± 10 V	-	-	±10	μA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 4.5 V, I_{DS} = 7.3 A		11	14	mΩ
		V_{GS} = 2.5 V, I_{DS} = 6.4 A	-	14	18	
		V_{GS} = 1.8 V, I_{DS} = 2.1 A	-	20	30	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 7.3 A, V_{GS} = 0 V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_{DS} = 7.3 A, V_{GS} = 0 V dI_{SD}/dt = 100 A/μs	-	11	-	nS
Q_{rr}	Reverse Recovery Charge		-	3	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 10 V Frequency = 1 MHz	-	1036	-	pF
C_{oss}	Output Capacitance		-	104	-	
C_{rss}	Reverse Transfer Capacitance		-	97	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 10 V, V_{GEN} = 4.5 V, R_G = 3.9 Ω, R_L = 1.4 Ω, I_{DS} = 7.3 A	-	4	-	nS
t_r	Turn-on Rise Time		-	32	-	
t_d(off)	Turn-off Delay Time		-	28	-	
t_f	Turn-off Fall Time		-	7	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{DS} = 10 V, V_{GS} = 4.5 V, I_{DS} = 7.3 A	-	12	-	nC
Q_{gs}	Gate-Source Charge		-	3.6	-	
Q_{gd}	Gate-Drain Charge		-	2.3	-	

Notes :

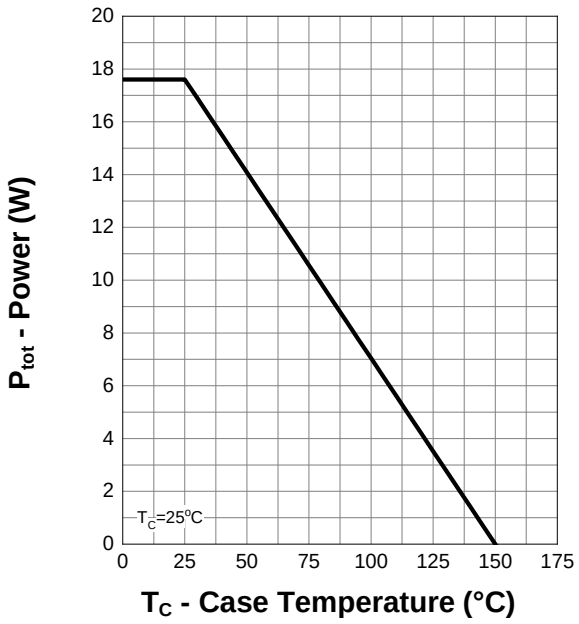
a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

b : Guaranteed by design, not subject to production testing

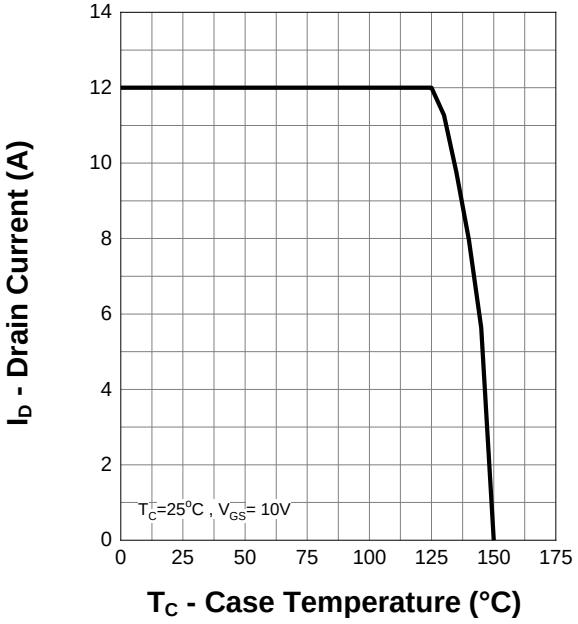


7. Typical Characteristics

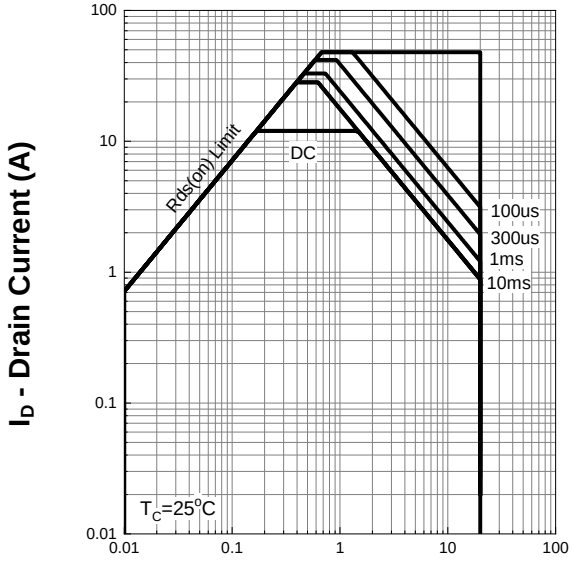
Power Capability



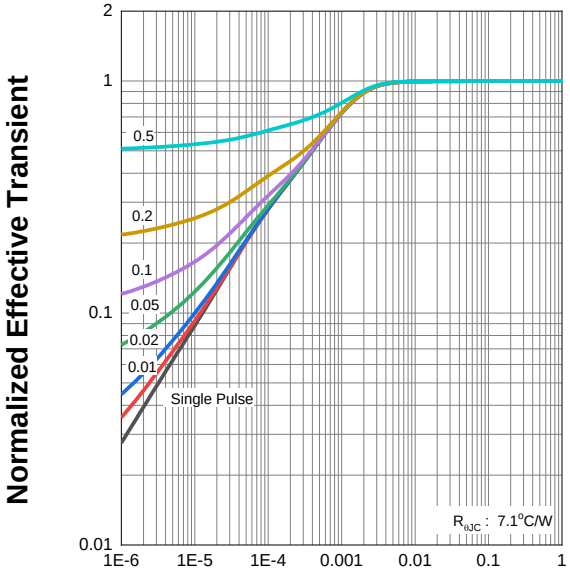
Current Capability



Safe Operating Area



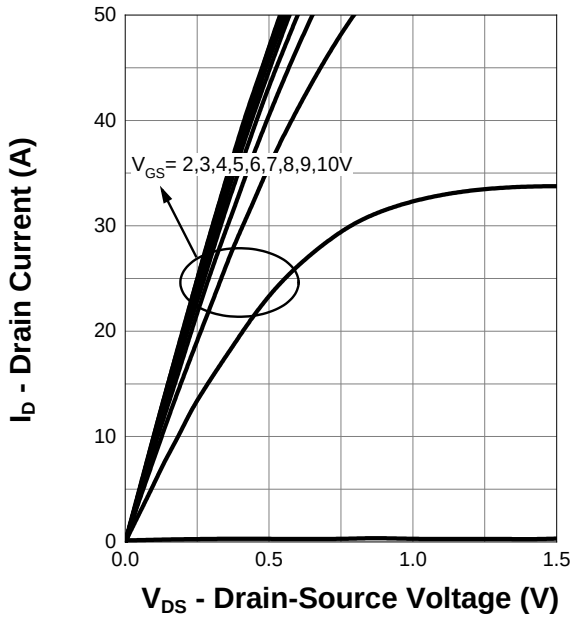
Transient Thermal Impedance



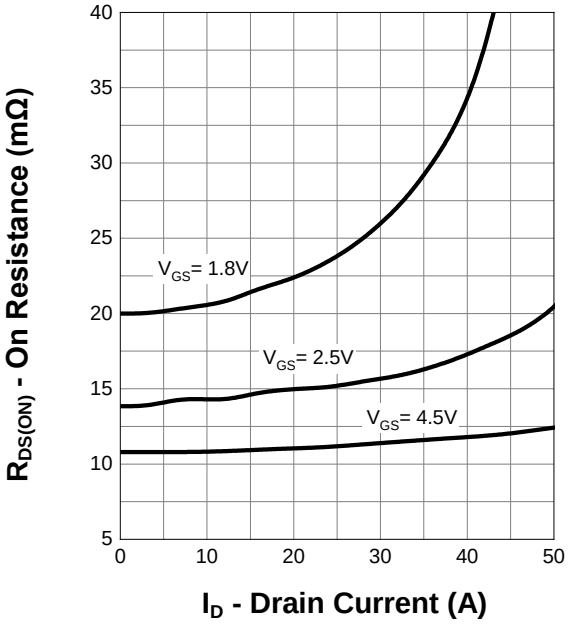


7. Typical Characteristics (cont.)

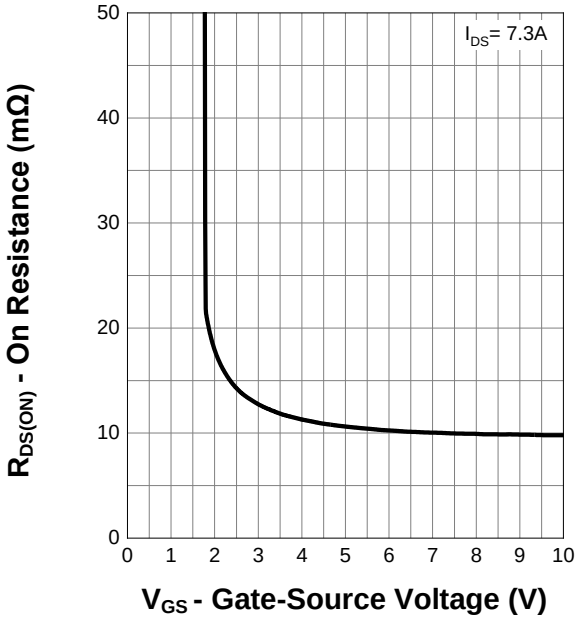
Output Characteristics



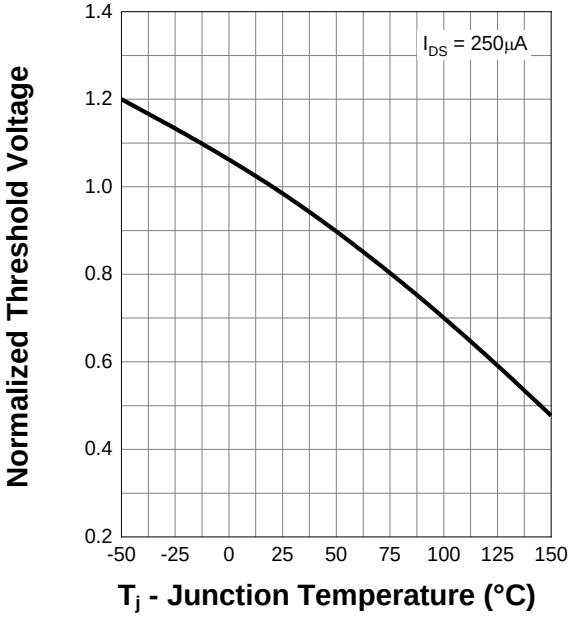
On Resistance



Transfer Characteristics



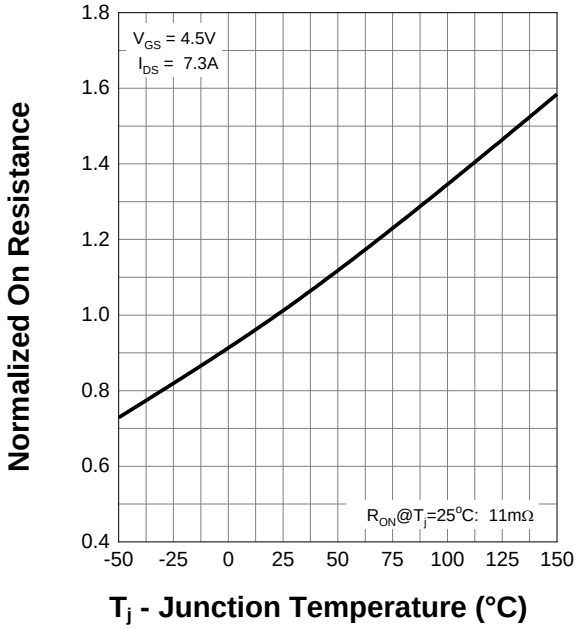
Normalized Threshold Voltage



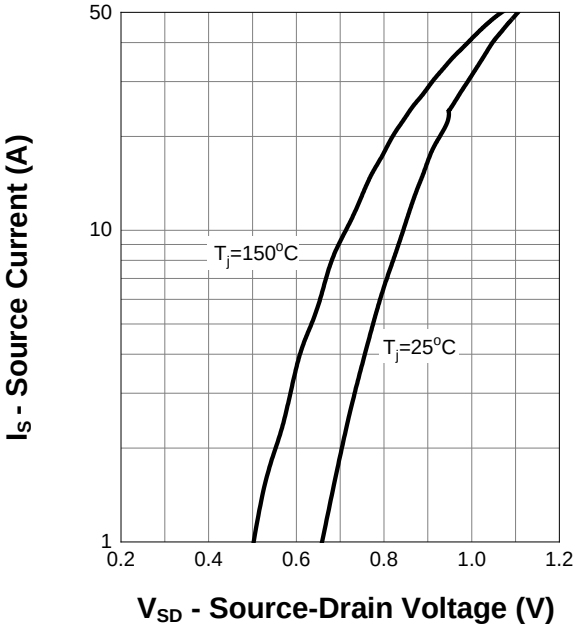


7. Typical Characteristics (cont.)

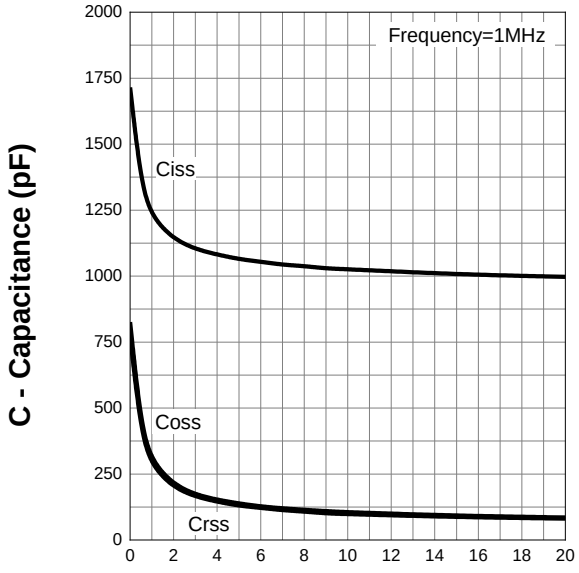
Normalized On Resistance



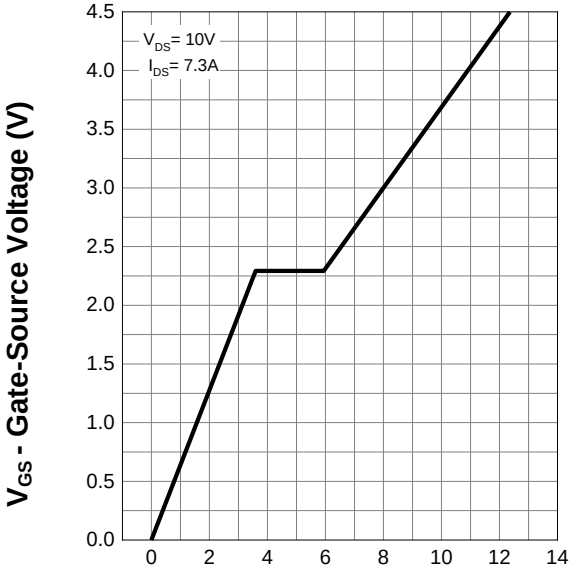
Diode Forward Current



Capacitance



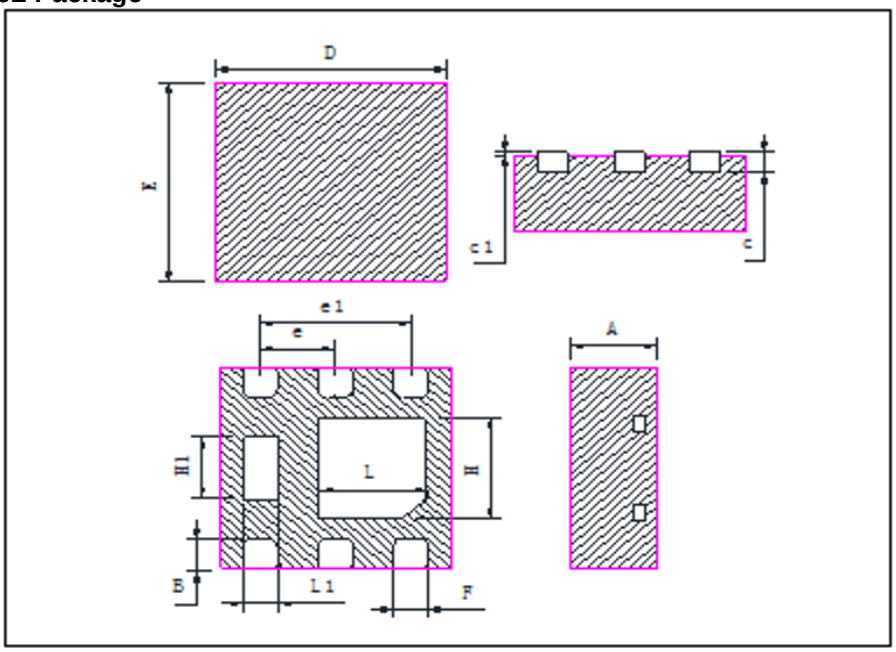
Gate Charge





8. Package Dimensions

DFN2x2-6L Package



SYMBOL	Unit : mm		Unit : inch	
	MIN	MAX	MIN	MAX
A	0.700	0.800	-	0.031
c1	0.000	0.050	0.000	0.002
c	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
L	0.800	1.000	0.031	0.039
H	0.850	1.050	0.033	0.041
L1	0.250	0.350	0.010	0.014
H1	0.500	0.650	0.020	0.026
B	0.200	0.300	0.008	0.012
F	0.250	0.350	0.010	0.014
e	0.65 REF		0.025 REF	
e1	1.30 REF		0.051 REF	

Note : Dimension D and E do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 0.25mm(10 mils).