

Datasheet

FS8601R

Dual N-Channel Enhancement Mode Power MOSFET

FORTUNE,
Properties
For Reference Only

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1. Features

1.1 Low on-resistance

- 1.1.1 $R_{DS(ON)} = 23\text{ m}\Omega$ MAX. ($V_{GS} = 4.5\text{V}$, $I_D = 4\text{A}$)
- 1.1.2 $R_{DS(ON)} = 24\text{ m}\Omega$ MAX. ($V_{GS} = 4\text{V}$, $I_D = 4\text{A}$)
- 1.1.3 $R_{DS(ON)} = 30\text{ m}\Omega$ MAX. ($V_{GS} = 3.1\text{V}$, $I_D = 4\text{A}$)
- 1.1.4 $R_{DS(ON)} = 35\text{ m}\Omega$ MAX. ($V_{GS} = 2.5\text{V}$, $I_D = 2\text{A}$)
- 1.1.5 ESD Rating: $\geq 2000\text{V}$ HBM

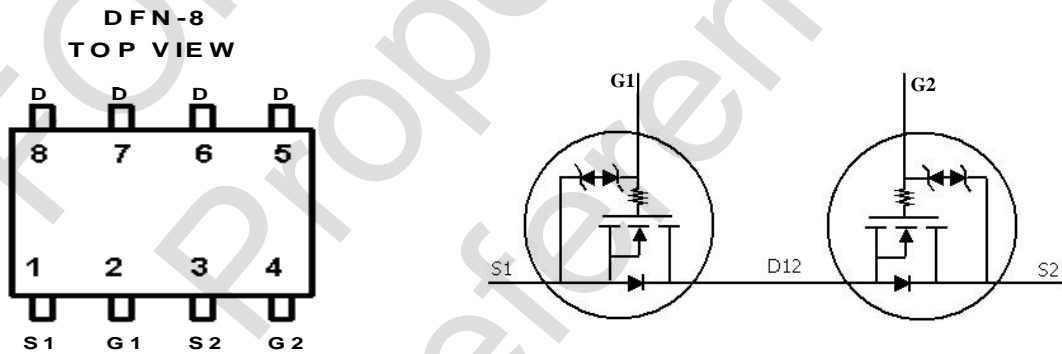
2. Applications

- Li-ion battery management applications

3. Ordering Information

Product Number	Description	Package Type	Quantity/Reel
FS8601R	DFN-8 package version	DFN-8	3,000

4. Pin Assignment



5. Limiting Values

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	20	V
VGS	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ³	6.5	A
IDM	Pulsed Drain Current ¹	40	A
PD @ $T_A = 25^\circ\text{C}$	Total Power Dissipation	1.4	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
TJ	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
Is	Diode Forward Current	1.2	A

6. Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient	Max. 89	°C/W

7. Electrical Characteristics

Electrical Characteristics @T_a = 25°C (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 1mA	20	-	-	V
R _{DS(ON)} ¹	Static Drain-Source On-Resistance ²	V _{GS} = 4.5V, I _D = 4A	-	17	23	mΩ
		V _{GS} = 4V, I _D = 4A	-	18	24	
		V _{GS} = 3.1V, I _D = 4A	-	20	30	
		V _{GS} = 2.5V, I _D = 2A	-	24	35	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = 10V, I _D = 1mA	0.5		1.3	V
I _{DSS}	Drain-Source Leakage Current (T _J = 25°C)	V _{DS} = 20V, V _{GS} = 0V	-	-	1	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±8V, V _{DS} = 0V	-	-	±10	uA
Diode Characteristics						
V _{SD} ¹	Diode Forward Voltage	I _{SD} = 6.5A, V _{GS} = 0V		0.75	1.2	V
Dynamic Characteristics²						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 10V Frequency = 1MHz		1140		pF
C _{oss}	Output Capacitance			420		
C _{rss}	Reverse Transfer Capacitance			190		
t _{d(on)}	Turn-on Delay Time	V _{DS} = 10V, V _{GEN} = 4V, R _G = 1kΩ, R _L = 2.86Ω, I _D = 3.5A		425		ns
t _r	Turn-on Rise Time			1500		
t _{d(off)}	Turn-off Delay Time			4000		
t _f	Turn-off Rise Time			2860		
Gate Charge Characteristics²						
Q _g	Total Gate Charge	V _{GS} = 10V, V _{DS} = 10V, I _D = 6.5A		26.8		nC
Q _{gs}	Gate-Source Charge			1.4		
Q _{gd}	Gate-Drain Charge			5.1		

Notes :

1. Pulse width ≤ 300us, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing

8. Typical Characteristics

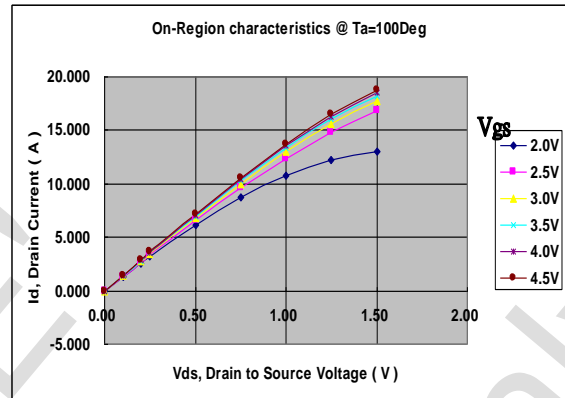
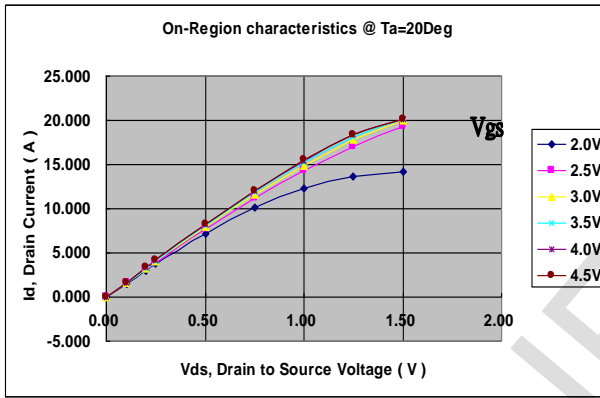


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

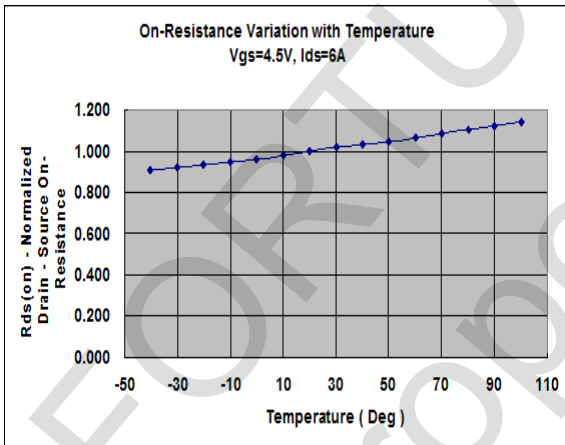


Fig 3. Normalized On-Resistance

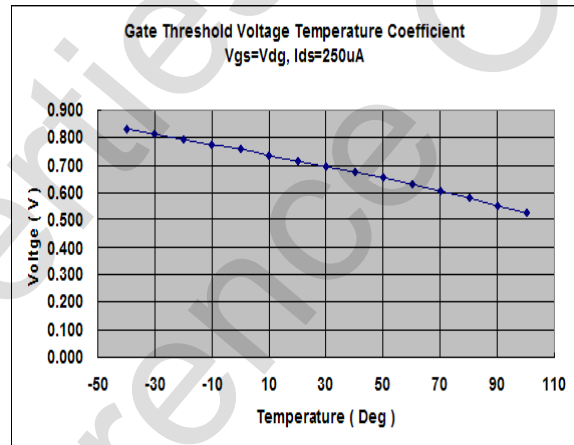


Fig 4. Gate Threshold Variation with Temperature

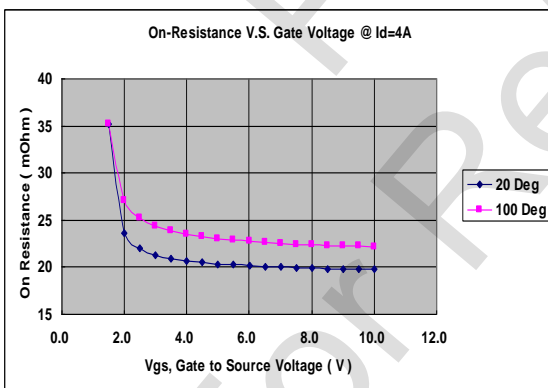
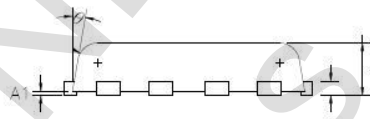
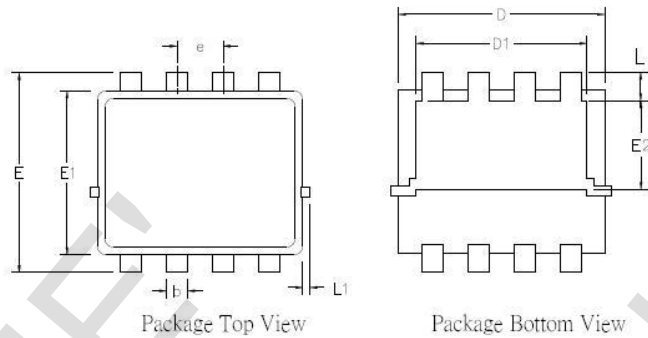


Fig 5. Forward Characteristic of Reverse Diode

9. Package Information

SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	0.56	0.6	0.68
A1	0	—	0.05
b	0.25	0.3	0.35
c	0.08	0.15	0.25
D	2.9 BSC		
D1	2.4 BSC		
E	2.8 BSC		
E1	2.3 BSC		
E2	1.195 BSC		
e	0.65BSC		
L	0.2	0.38	0.45
L1	—	—	0.03
θ	0°	12°	15°



10. Revision History

Version	Date	Page	Description
1.0	2011/01/10	-	Version 1.0 released
1.1	2014/05/22	2	Revised company address