

FQB2N100TM

1000V N-Channel MOSFET

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Product Summary

- V_{DS} 1100 V
- I_{DS} 2.0A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<7.5\Omega$ (Typ.)
- Low Gate Charge Minimize Switching Loss

Application

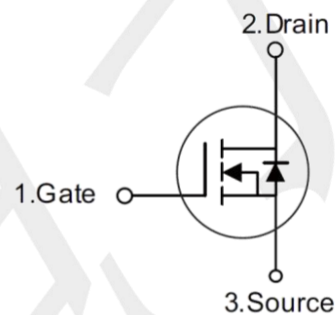
- Adaptor
- Charger
- Power management
- SMPS Standby Power

Package and Pin Configuration



TO-252

Circuit diagram



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

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Voltage	V_{DS}	1000	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current	I_D	2.0	A
Pulsed Drain Current	I_{DM}	7.0	A
Single Pulse Avalanche Energy($V_{DD}=50V$)	E_{AS}	65	mJ
Maximum Power Dissipation	P_D	83	W
Operating Junction Temperature Range	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	55	$^\circ\text{C/W}$

Note : When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA T _j =25℃	BV _{DSS}	1000	--	--	V
	V _{GS} =0V, I _D =250μA T _j =150℃		--	1100	--	V
Gate-Source Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	V _{GS(th)}	2.5	--	5.0	V
Gate-Source Leakage	V _{DS} =0V, V _{GS} = ±30V	I _{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V _{DS} = 120V, V _{GS} =0V	I _{DSS}	--	--	1	μA
Drain-Source On-State Resistance (Note 1)	V _{GS} = 10V, I _D = 1.0A	R _{DS(on)}	--	7.5	9.0	Ω
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V _{DS} = 960V, I _D =2.0A, V _{GS} = 10V	Q _g	--	23.5	--	nC
Gate-Source Charge (Note 3)		Q _{gs}	--	3.5	--	
Gate-Drain Charge (Note 3)		Q _{gd}	--	15	--	
Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, F= 1.0MHz	C _{iss}	--	634	--	pF
Output Capacitance		C _{oss}	--	62	--	
Reverse Transfer Capacitance		C _{rss}	--	7	--	
Switching						
Turn-On Delay Time (Note 3)	V _{DD} = 600V, I _D = 2.0A, V _{GS} = 10V, R _G = 25Ω	t _{d(on)}	--	30	--	nS
Rise Time (Note 3)		t _r	--	17	--	
Turn-Off Delay Time (Note 3)		t _{d(off)}	--	75.5	--	
Fall Time (Note 3)		t _f	--	51	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V _{GS} = 0V, I _S = 1.5A	V _{SD}	--	0.8	1.4	V
Continuous Source Current	Integral reverse diode in the MOSFET	I _S	--	--	2.0	A
Pulsed Current (Note 1)		I _{SM}	--	--	7.0	A
Reverse recovery time	V _{GS} =0V ,I _F =2.0A,	t _{rr}	--	1200	--	nS
Reverse recovery charge	diF/dt=-100A/μs	Q _{rr}	--	3.95	--	nC

Notes:

1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 1%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

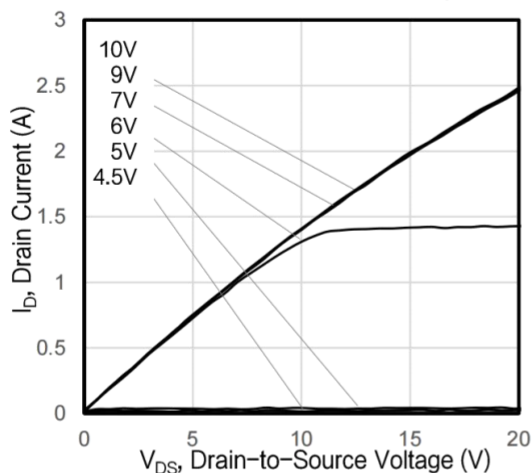


Figure 2. Body Diode Forward Voltage

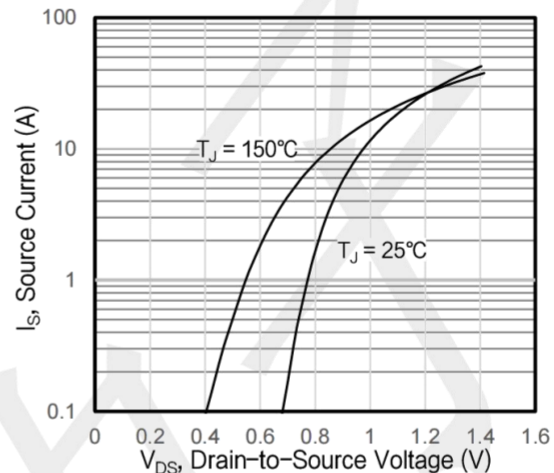


Figure 3. Drain Current vs. Temperature

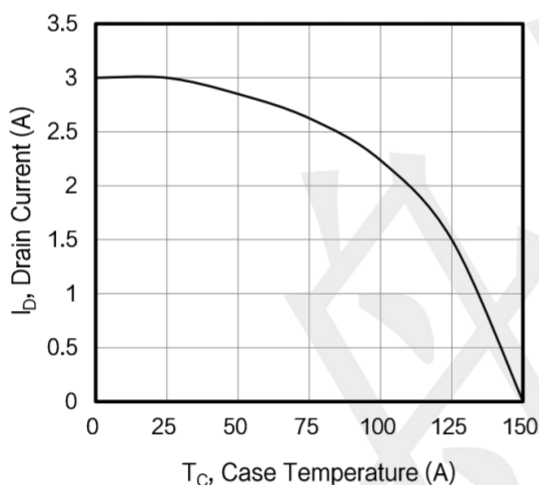


Figure 4. BV_{DSS} Variation vs. Temperature

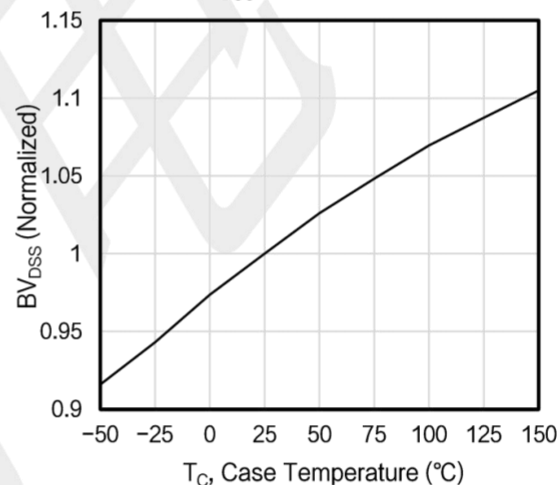


Figure 5. Transfer Characteristics

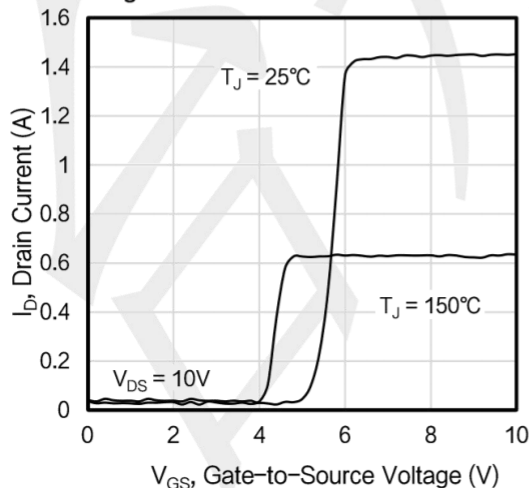
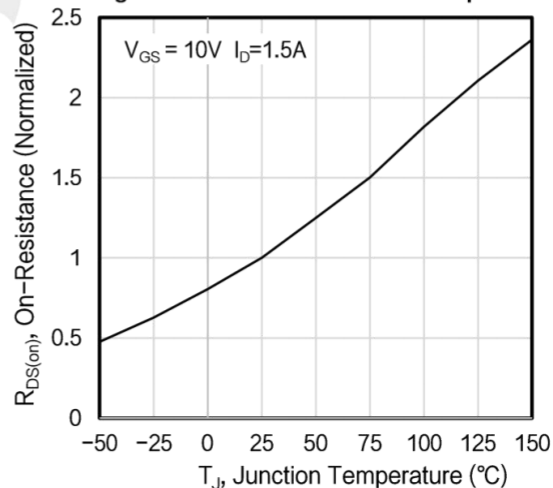
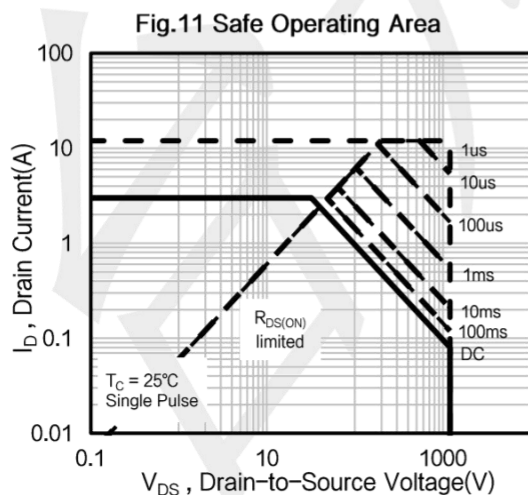
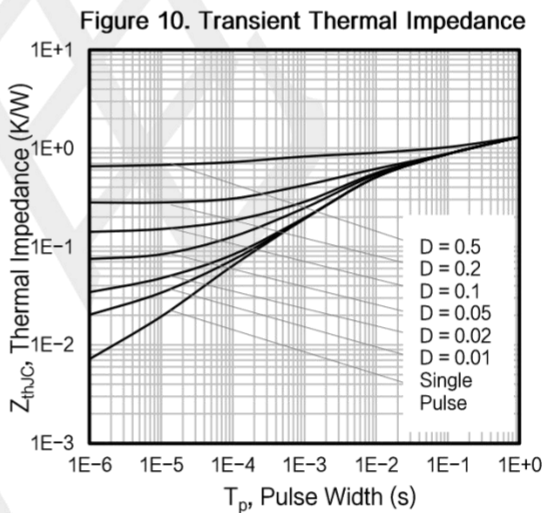
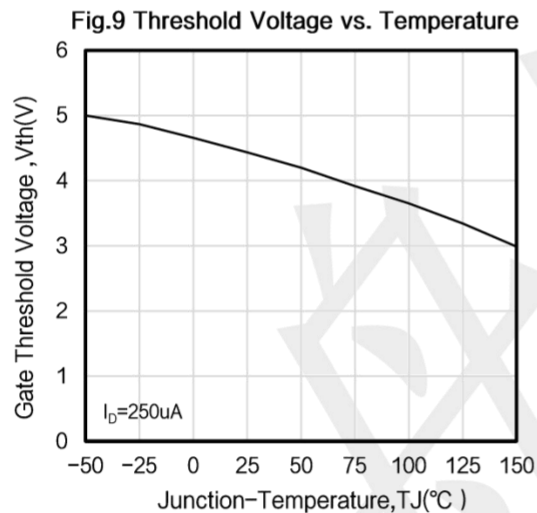
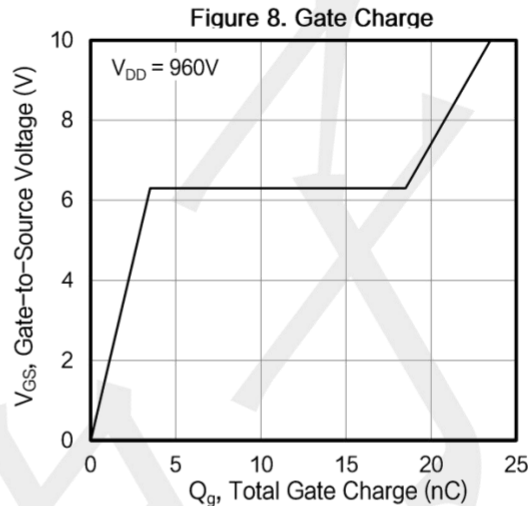
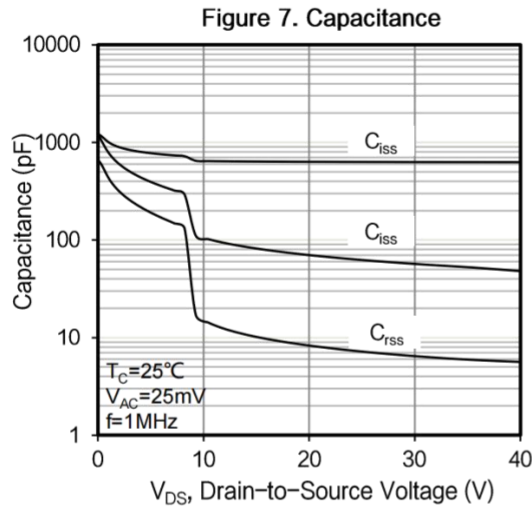


Figure 6. On-Resistance vs. Temperature

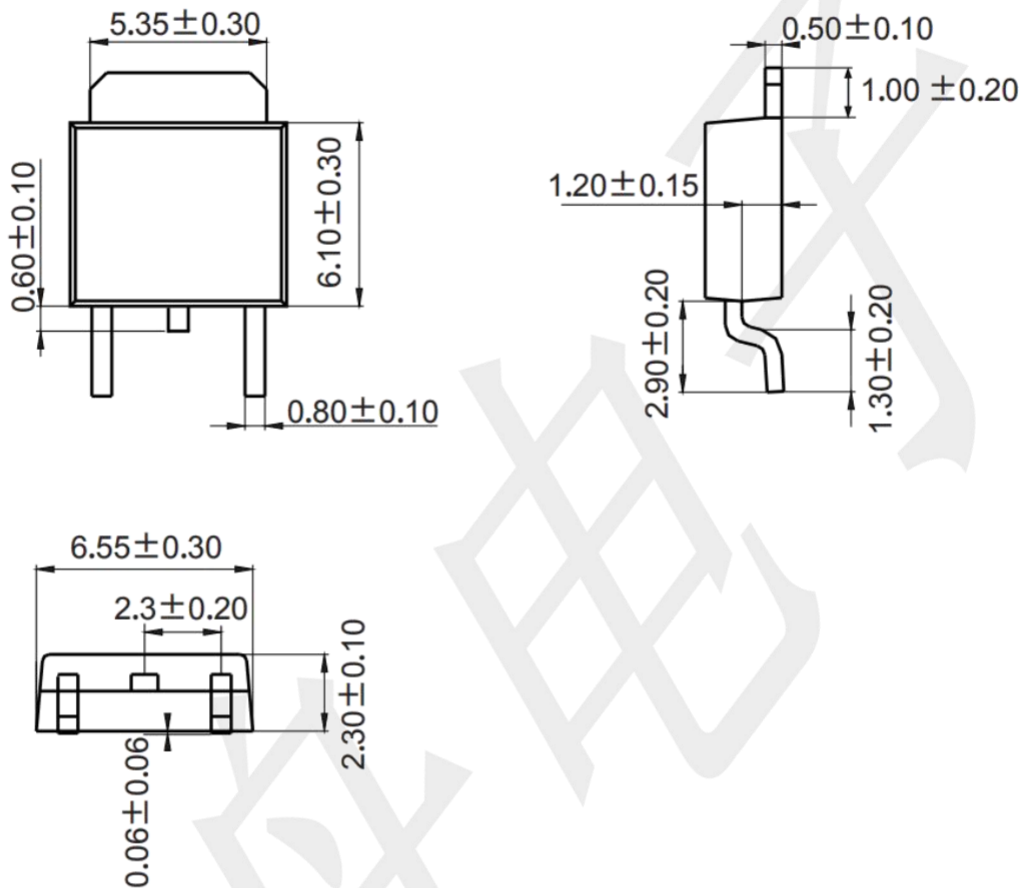


TYPICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)



Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)

