

Product Summary

- V_{DS} 1000 V
- I_{DS} 2.5A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<6\Omega$ (Typ.)
- Low Gate Charge Minimize Switching Loss

Reference: STD3NK100Z

Package and Pin Configuration

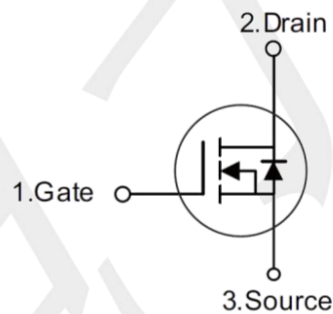


TO-252

Application

- Adaptor
- Charger
- Power management
- SMPS Standby Power

Circuit diagram



Absolute Maximum Ratings (T_A=25°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	2.5	A
Pulsed Drain Current	I_{DM}	10	A
Single Pulse Avalanche Energy(VDD=50V)	E_{AS}	65	mJ
Maximum Power Dissipation	P_D	75	W
Operating Junction Temperature Range	T_J	+150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

Thermal Characteristic

PARAMETER		Symbol	Value	Unit
Thermal Resistance, Junction to Case	PCB Mount (Note1)	$R_{\theta JC}$	1.3	°C/W
Thermal Resistance, Junction-to-Ambient	PCB Mount (Note1)	$R_{\theta JA}$	63	°C/W

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

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

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	1000	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.5	--	5.0	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 30V$	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)	$V_{GS}= 10V, I_D= 1.5A$	$R_{DS(on)}$	--	6.0	9.0	Ω
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}= 960V, I_D= 2.5A,$ $V_{GS}= 10V$	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)	$V_{DD}= 600V, I_D= 2.5A,$ $V_{GS}= 10V,$ $R_G= 25\Omega$	$t_{d(on)}$	--	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	--	--	2.5	A
Pulsed Current (Note 1)		I_{SM}	--	--	10	A
Reverse recovery time	$V_{GS}=0V, I_F=2.5A,$	t_{rr}	--	1200	--	nS
Reverse recovery charge	$diF/dt=-100A/\mu s$	Q_{rr}	--	3.95	--	nC

Notes:

1. Pulse test; pulse width $\leq 300 \mu s$, duty cycle $\leq 1\%$.
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 ($T_J = 25^\circ\text{C}$)

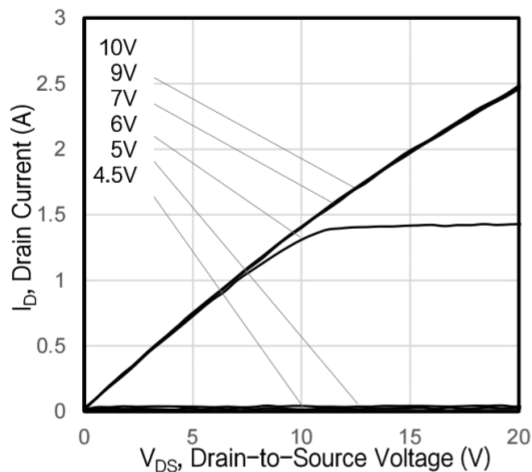


Figure 2. Body Diode Forward Voltage

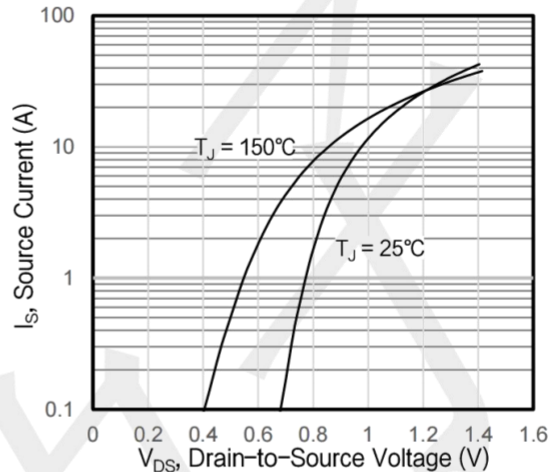


Figure 3. Drain Current vs. Temperature

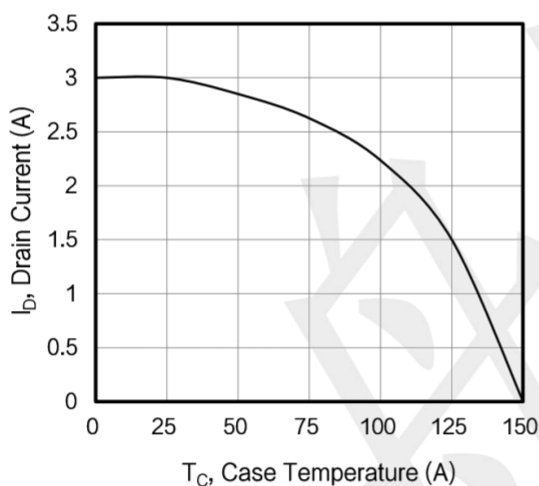


Figure 4. BV_{DSS} Variation vs. Temperature

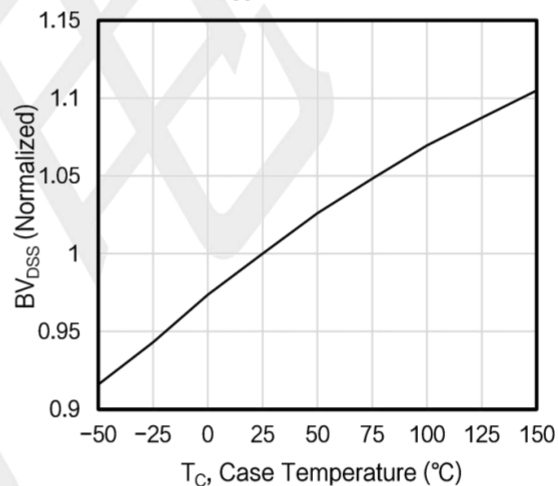


Figure 5. Transfer Characteristics

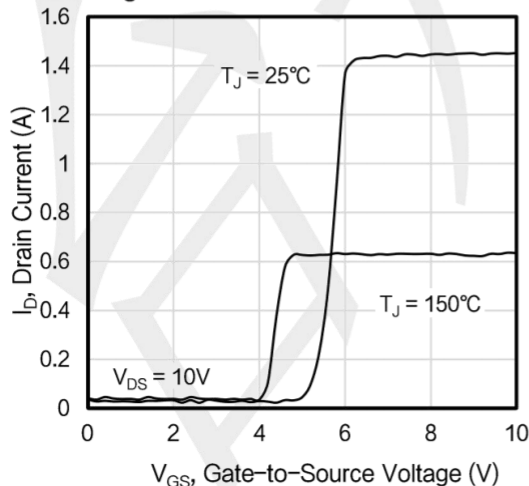
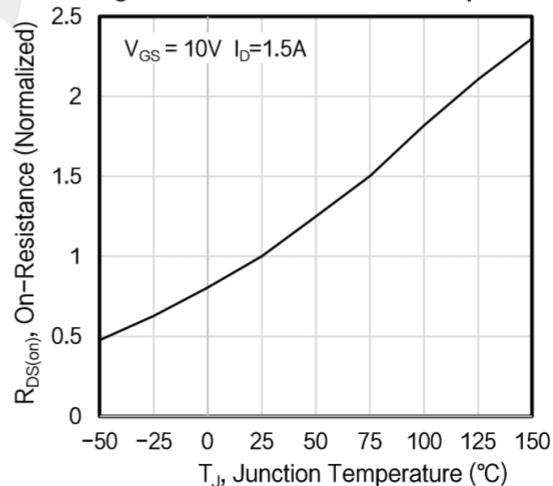
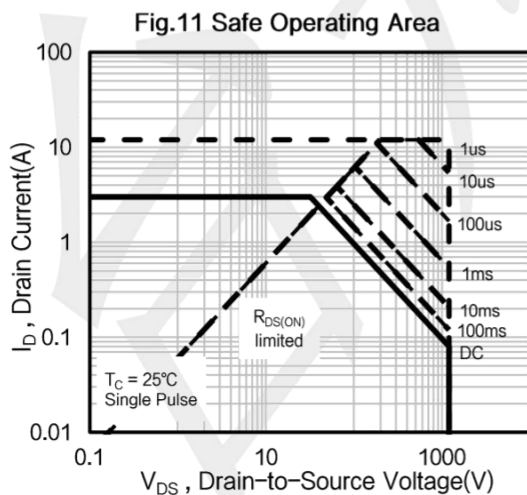
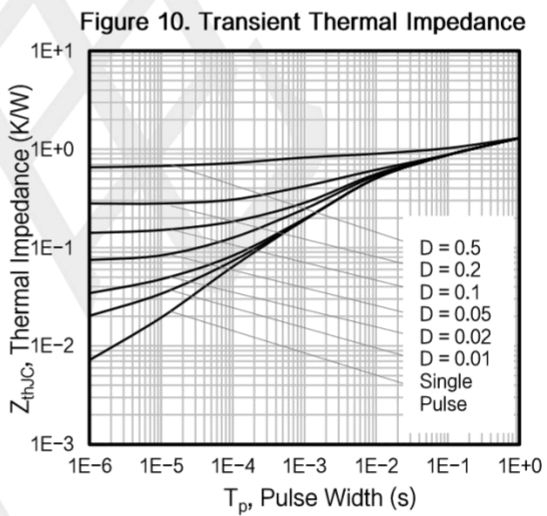
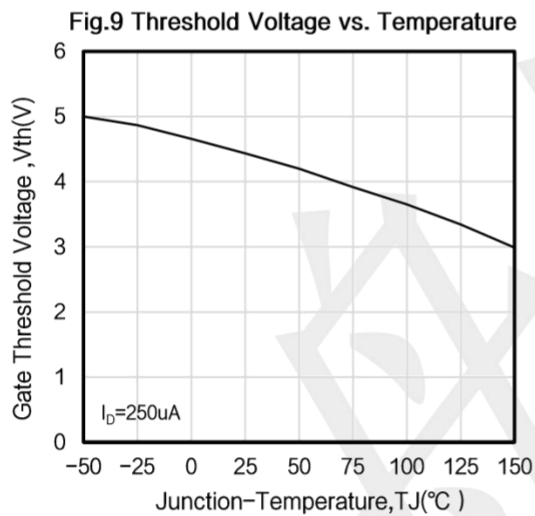
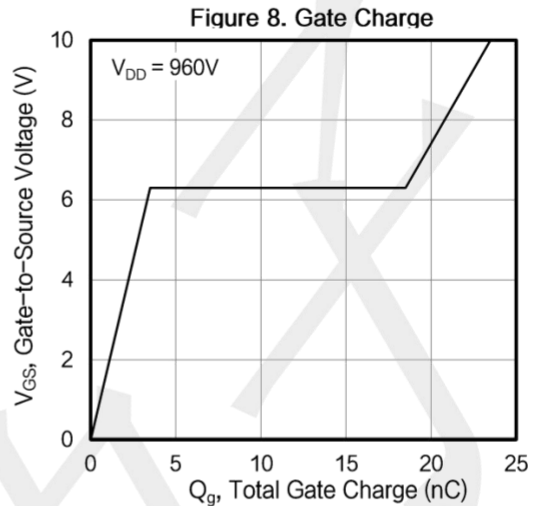
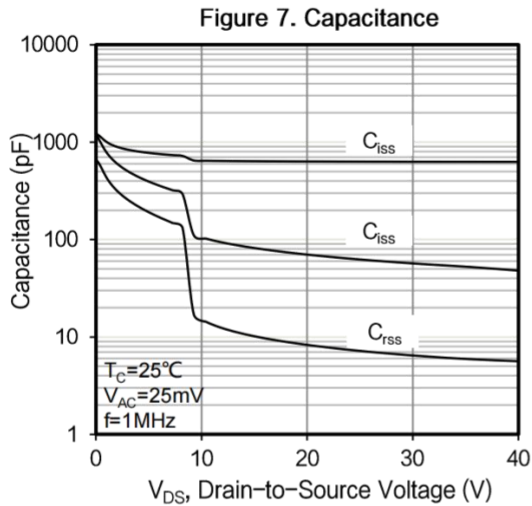


Figure 6. On-Resistance vs. Temperature

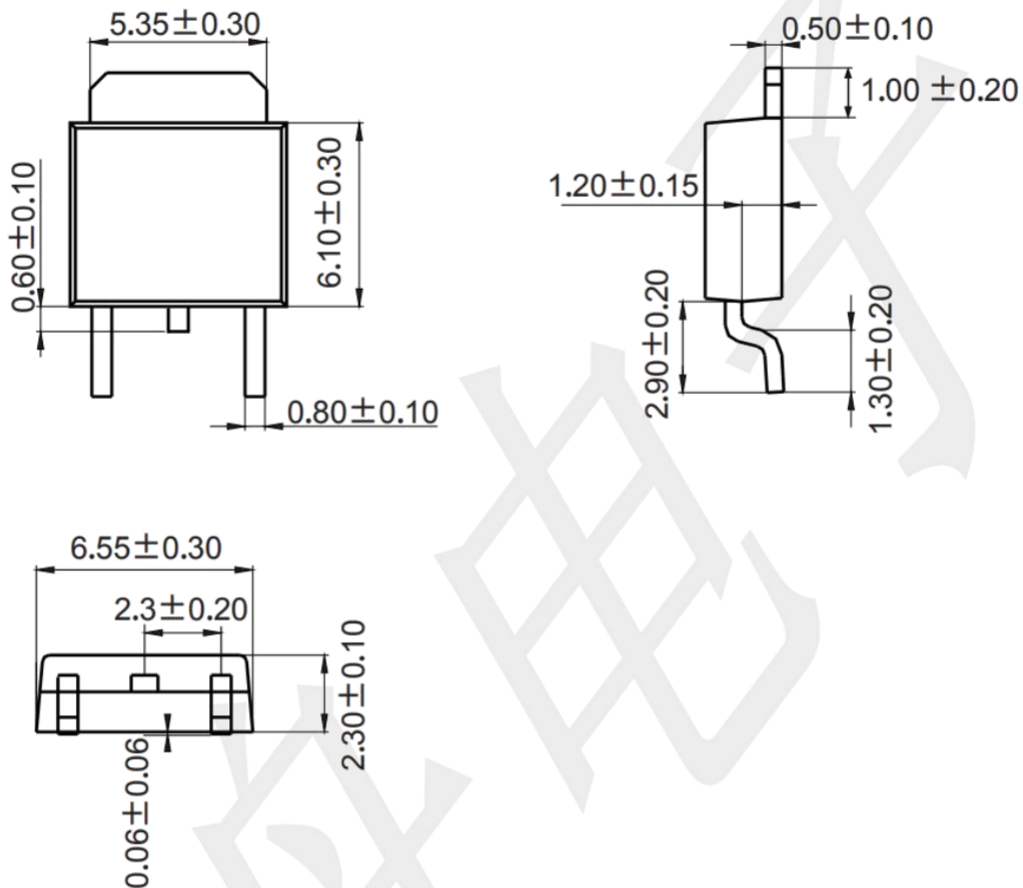


TYPICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)



Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)

