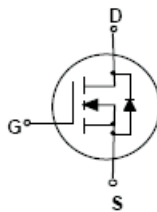
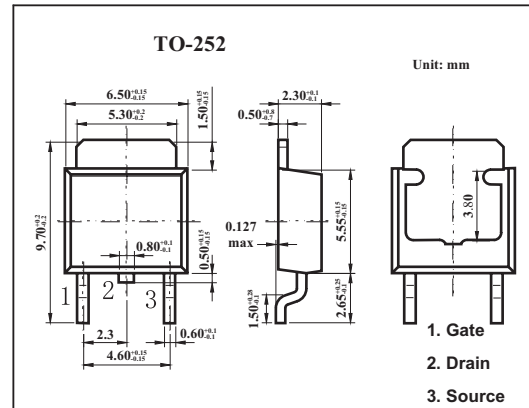


## 100V N-Channel PowerTrench MOSFET

## KDD3670

## ■ Features

- 34 A, 100 V.  $R_{DS(ON)} = 32\text{m}\Omega$  @  $V_{GS} = 10\text{ V}$   
 $R_{DS(ON)} = 35\text{m}\Omega$  @  $V_{GS} = 6\text{ V}$
- Low gate charge (57 nC typical)  
Fast switching speed
- High performance trench technology for extremely low  $R_{DS(ON)}$
- High power and current handling capability

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	$V_{DS}$	100	V
Gate to Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current Continuous (Note 1)	$I_D$	34	A
Drain Current Pulsed		100	A
Power dissipation @ $T_c=25^\circ\text{C}$ (Note 1)	$P_D$	83	W
Power dissipation @ $T_a=25^\circ\text{C}$ (Note 1a)		3.8	
Power dissipation @ $T_a=25^\circ\text{C}$ (Note 1b)		1.6	
Operating and Storage Temperature	$T_J, T_{STG}$	-55 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.8	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	96	$^\circ\text{C/W}$

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## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Single Pulse Drain-Source Avalanche Energy	WDSS	V <sub>DD</sub> = 50 V, I <sub>D</sub> = 7.3A (Not 2)			360	mJ
Maximum Drain-Source Avalanche Current	I <sub>AR</sub>	( Not 2)			7.3	A
Drain-Source Breakdown Voltage	BVDSS	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μ A	100			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BVDSS}{\Delta T_J}$	I <sub>D</sub> = 250 μ A, Referenced to 25°C		92		mV/°C
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 80 V, V <sub>GS</sub> = 0 V			1	μ A
Gate-Body Leakage, Forward	I <sub>GSSF</sub>	V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0 V			100	nA
Gate-Body Leakage, Reverse	I <sub>GSSR</sub>	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V			-100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μ A	2	2.5	4	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I <sub>D</sub> = 250 μ A, Referenced to 25°C		-7.2		mV/°C
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 7.3 A		22	32	mΩ
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 7.3 A, T <sub>J</sub> = 125°C		39	56	
		V <sub>GS</sub> = 6 V, I <sub>D</sub> = 7 A,		24	35	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 5 V	25			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 7.3 A	15	31		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0 V, f = 1.0 MHz		2490		pF
Output Capacitance	C <sub>oss</sub>			265		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			80		pF
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 30 V, I <sub>D</sub> = 1 A, V <sub>GS</sub> = 10 V, R <sub>GEN</sub> = 6 Ω		16	26	ns
Turn-On Rise Time	t <sub>r</sub>			10	18	ns
Turn-Off Delay Time	t <sub>d(off)</sub>			56	84	ns
Turn-Off Fall Time	t <sub>f</sub>			25	40	ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 50 V, I <sub>D</sub> = 7.3 A, V <sub>GS</sub> = 10 V (Note 2)		57	80	nC
Gate-Source Charge	Q <sub>gs</sub>			11		nC
Gate-Drain Charge	Q <sub>gd</sub>			15		nC
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>				2.7	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 2.7 A (Not 2)		0.72	1.2	V

## Notes:

1. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R<sub>θJC</sub> is guaranteed by design while R<sub>θCA</sub> is determined by the user's board design.



a) R<sub>θJA</sub> = 40°C/W when mounted on a 1in<sup>2</sup> pad of 2oz copper.



b) R<sub>θJA</sub> = 96°C/W on a minimum mounting pad.

Scale 1 : 1 on letter size paper

Pulse Test: Pulse Width < 300μs, Duty Cycle < 2.0%