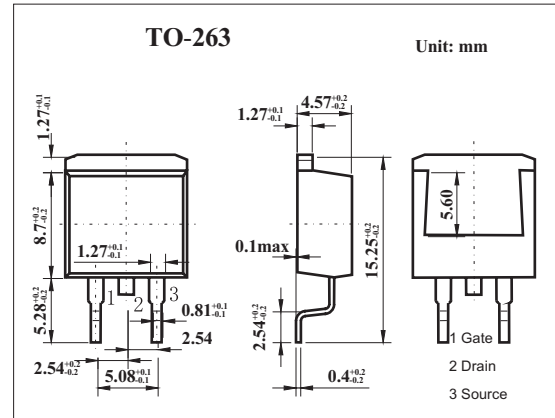
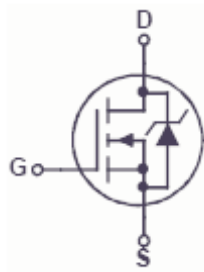


## N-Channel PowerTrench MOSFET

### KDB3682 (FDB3682)

#### ■ Features

- $r_{DS(ON)} = 32m\ \Omega$  (Typ.),  $V_{GS} = 10V$ ,  $I_D = 32A$
- $Q_{g(tot)} = 18.5nC$  (Typ.),  $V_{GS} = 10V$
- Low Miller Charge
- Low QRR Body Diode
- UIS Capability (Single Pulse and Repetitive Pulse)



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain to source voltage	$V_{DS}$	100	V
Gate to source voltage	$V_{GS}$	$\pm 20$	V
Drain current-Continuous	$I_D$	$T_c=25^\circ C$	32
		$T_A=25^\circ C$	6
Power dissipation Derate above $25^\circ C$	$P_D$	95	W
		0.63	W/ $^\circ C$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	43	$^\circ C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.58	$^\circ C/W$
Channel temperature	$T_{ch}$	175	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +175	$^\circ C$

**KDB3682 (FDB3682)**

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain to source breakdown voltage	V <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	100			V
Drain cut-off current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0			1	μA
		V <sub>DS</sub> =80V, V <sub>GS</sub> =0, T <sub>C</sub> =150°C			250	μA
Gate leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2.0		4.0	V
Drain to source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =32A		0.032	0.036	Ω
		V <sub>GS</sub> =16V, I <sub>D</sub> =16A		0.040	0.060	
		V <sub>GS</sub> =10V, I <sub>D</sub> =32A, T <sub>C</sub> =175°C		0.080	0.090	
Input capacitance	C <sub>iss</sub>			1250		pF
Output capacitance	C <sub>oss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1MHZ		190		pF
Reverse transfer capacitance	C <sub>rss</sub>			45		pF
Total Gate Charge at 10V	Q <sub>g(TOT)</sub>	V <sub>GS</sub> = 0V to 10V		18.5	28	nC
Threshold Gate Charge	Q <sub>g(TH)</sub>	V <sub>GS</sub> = 0V to 2V		2.4	3.6	nC
Gate to Source Gate Charge	Q <sub>gs</sub>			6.5		nC
Gate Charge Threshold to Plateau	Q <sub>gs2</sub>	V <sub>DS</sub> = 50 V, I <sub>D</sub> = 32A, I <sub>g</sub> =1.0mA		4.1		nC
Gate to Drain "Miller" Charge	Q <sub>gd</sub>			4.6		nC
Turn-On Time	t <sub>ON</sub>				83	ns
Turn-On Delay Time	t <sub>d(ON)</sub>			9		ns
Rise Time	t <sub>r</sub>	V <sub>DD</sub> = 50 V, I <sub>D</sub> = 32A,		46		ns
Turn-Off Delay Time	t <sub>d(OFF)</sub>	V <sub>GS</sub> = 10 V, R <sub>GS</sub> = 16 Ω		26		ns
Fall Time	t <sub>f</sub>			32		ns
Turn-Off Time	t <sub>OFF</sub>				87	ns
Source to Drain Diode Voltage	V <sub>SD</sub>	I <sub>SD</sub> =32A			1.25	V
		I <sub>SD</sub> =16A			1.0	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>SD</sub> = 32A, di <sub>SD</sub> /dt = 100A/μs			55	ns
Reverse Recovered Charge	Q <sub>RR</sub>	I <sub>SD</sub> = 32A, di <sub>SD</sub> /dt = 100A/μs			90	nC