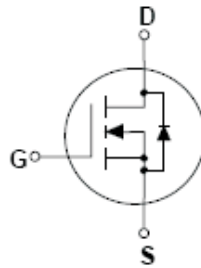
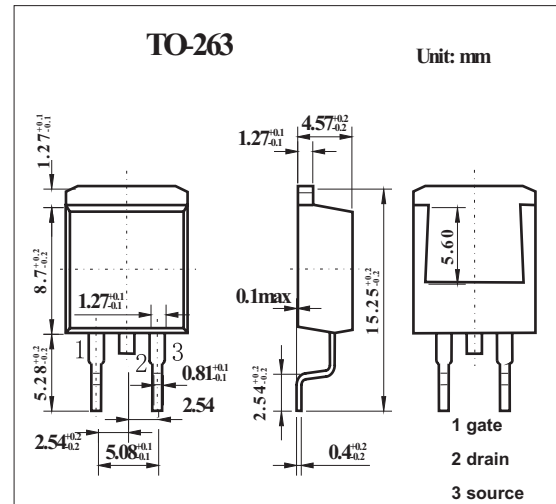


N-Channel Logic Level PowerTrench MOSFET

KDB7045L

■ Features

- 100 A, 30 V. $R_{DS(ON)} = 0.0045 \Omega @ V_{GS} = 10 \text{ V}$
 $R_{DS(ON)} = 0.006 \Omega @ V_{GS} = 4.5 \text{ V}$
- Critical DC electrical parameters specified at elevated temperature
- Rugged internal source-drain diode can eliminate the need for an external Zener diode transient suppressor
- High performance trench technology for extremely low $R_{DS(ON)}$
- 175°C maximum junction temperature rating

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

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	V_{DS}	30	V
Gate to Source Voltage	V_{GS}	± 20	V
Drain Current Continuous	I_D	100	A
		75	
Drain Current Pulsed		300	A
Power dissipation @ $T_c=25^\circ\text{C}$ Derate above 25°C	P_D	125	W
	P_D	0.85	W/ $^\circ\text{C}$
Operating and Storage Temperature	T_J, T_{STG}	-65 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.2	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$

KDB7045L

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BVDSS	V _{GS} = 0 V, I _D = 250 μA	30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BVDSS}{\Delta T_J}$	I _D = 250 μA, Referenced to 25°C		22		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24 V, V _{GS} = 0 V			1	μA
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} = 20 V, V _{DS} = 0 V			100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} = -20 V, V _{DS} = 0 V			-100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1	1.5	3	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C		-5		mV/°C
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 50 A		0.0039	0.0045	mΩ
		V _{GS} = 10 V, I _D = 50 A, T _J = 125°C		0.0056	0.0070	
		V _{GS} = 4.5 V, I _D = 40 A		0.0048	0.0060	
On-State Drain Current	I _{D(on)}	V _{GS} = 10 V, V _{DS} = 10 V	50			A
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 50 A		120		S
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1.0 MHz		5400		pF
Output Capacitance	C _{oss}			1170		pF
Reverse Transfer Capacitance	C _{rss}			530		pF
Turn-On Delay Time	t _{d(on)}			14	30	ns
Turn-On Rise Time	t _r	V _{DD} = 15 V, I _D = 50 A, V _{GS} = 10 V, R _{GEN} = 10 Ω, R _{GS} = 10 Ω *		114	160	ns
Turn-Off Delay Time	t _{d(off)}			105	150	ns
Turn-Off Fall Time	t _f			115	160	ns
Total Gate Charge	Q _g	V _{DS} = 15 V, I _D = 50 A, V _{GS} = 5 V *		50	70	nC
Gate-Source Charge	Q _{gs}			16		nC
Gate-Drain Charge	Q _{gd}			16		nC
Maximum Continuous Drain-Source Diode Forward Current *	I _S				75	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 50 A *		0.95	1.2	V

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