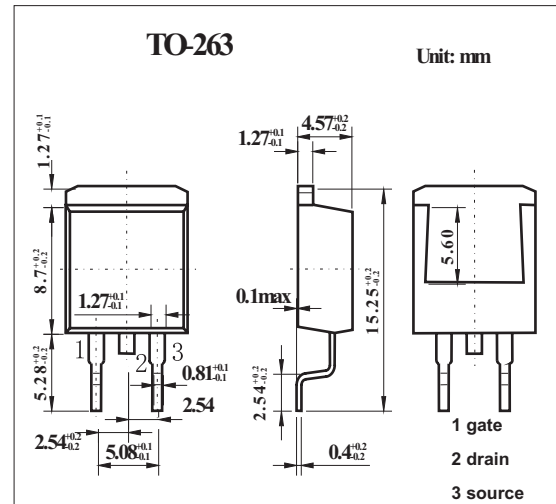
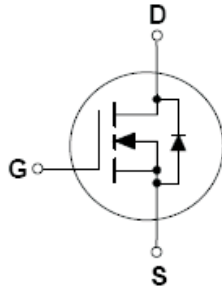


## N-Channel Logic Level Enhancement Mode Field Effect Transistor KDB6030L

### ■ Features

- 52A, 30 V.  $R_{DS(ON)} = 0.0135 \Omega @ V_{GS} = 10 \text{ V}$   
 $R_{DS(ON)} = 0.020 \Omega @ V_{GS} = 4.5 \text{ V}$
- Low gate charge (typical 34 nC).
- Low  $C_{rss}$  (typical 175 pF).
- Fast switching speed.



### ■ 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	$V_{GS}$	$\pm 20$	V
Drain Current Continuous	$I_D$	52	A
Drain Current Pulsed		156	A
Power dissipation @ $T_c = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	75	W
	$P_D$	0.5	W/ $^\circ\text{C}$
Operating and Storage Temperature	$T_J, T_{STG}$	-65 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	2	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$

## KDB6030L

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Single Pulse Drain-Source Avalanche Energy *	W <sub>DSS</sub>	V <sub>DD</sub> = 15 V, I <sub>D</sub> = 21A			150	mJ
Maximum Drain-Source Avalanche Current	I <sub>AR</sub>				21	A
Drain-Source Breakdown Voltage	B <sub>V</sub> DSS	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250 μA	30			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta B_{V_{DSS}}}{\Delta T_J}$	I <sub>D</sub> = 250 μA, Referenced to 25°C		37		mV/°C
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V			10	μA
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 μA	1	1.6	3	V
Gate Threshold Voltage Temperature Coefficient	$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	I <sub>D</sub> = 250 μA, Referenced to 25°C		-4		mV/°C
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 26 A		0.0095	0.0135	mΩ
		V <sub>GS</sub> = 10 V, I <sub>D</sub> = 26 A, T <sub>J</sub> = 125°C		0.014	0.023	
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 21 A,		0.015	0.02	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 10 V	60			A
On-State Drain Current	I <sub>D(on)</sub>	V <sub>GS</sub> = 4.5 V, V <sub>DS</sub> = 10 V	15			
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 26 A		37		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0 V, f = 1.0 MHz		1230		pF
Output Capacitance	C <sub>oss</sub>			640		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			175		pF
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15 V, I <sub>D</sub> = 52 A, V <sub>GS</sub> = 10 V, R <sub>GEN</sub> = 24 Ω *		7.6	15	ns
Turn-On Rise Time	t <sub>r</sub>			150	210	ns
Turn-Off Delay Time	t <sub>d(off)</sub>			29	46	ns
Turn-Off Fall Time	t <sub>f</sub>			17	27	ns
Total Gate Charge	Q <sub>g</sub>				34	46
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = 12 V, I <sub>D</sub> = 26A, V <sub>GS</sub> = 10 V *		6		nC
Gate-Drain Charge	Q <sub>gd</sub>			8		nC
Maximum Continuous Drain-Source Diode Forward Current *	I <sub>S</sub>				52	A
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 26 A *		0.91	1.3	V
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 26 A *T <sub>J</sub> =125°C		0.8	1.2	V

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