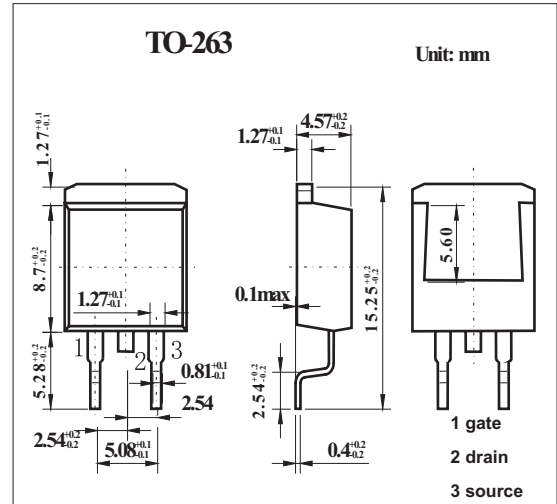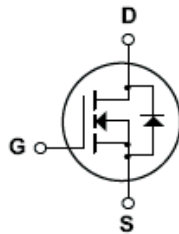**TY Semicondutor** ® TY

KQB630

■ Features

● 9A, 200 V. $R_{DS(ON)}$ = 0.4 Ω @ V_{GS} = 10 V

● Low gate charge (typical 19nC)

● Low Crss(typical 35pF)

● Fast switching

● 100% avalanche tested

● Improved dv/dt capability

TO-263 Unit: mm

1 gate
2 drain
3 source

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain to Source Voltage	V_{DSS}	200	V
Drain Current Continuous (Tc=25℃)	I_D	9	A
Drain Current Continuous (Tc=100℃)		5.7	A
Drain Current Pulsed *1	I_{DM}	36	A
Gate-Source Voltage	V_{GSS}	± 25	V
Single Pulsed Avalanche Energy*2	E_{AS}	162	mJ
Avalanche Current *1	I_{AR}	9	A
Repetitive Avalanche Energy *1	E_{AR}	7.8	mJ
Peak Diode Recovery dv/dt *3	dv/d_t	5.5	V/ns
Power dissipation @ T_A=25℃	P_D	3.13	W
Power dissipation @ T_C=25℃	P_D	78	W
Derate above 25℃		0.62	W/℃
Operating and Storage Temperature	T_J, T_{STG}	-55 to150	℃
Maximum lead temperature for soldering purposes,1/8" from case for 5 seconds	T_L	300	℃
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.61	℃/W
Thermal Resistance Junction to Ambient *4	$R_{\theta JA}$	40	℃/W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	℃/W

*1 Repetitive Rating:Pulse width limited by maximum junction temperature

*2 I=3mH,I_{AS}=9A,V_{DD}=50V,R_G=25 Ω ,Startion T_J=25℃

*3 I_{SD}≤9A,d_i/d_t≤300A/μ S,V_{DD}≤B_{VDSS},Startiong T_J=25℃

*4 When mounted on the minimum pad size recommended (PCB Mount)

KQB630

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250 μ A	200			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I_D = 250 μ A, Referenced to 25℃		0.20		mV/℃
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200 V, V_{GS} = 0 V			1	μ A
		V_{DS} = 160 V, T_C=125℃			10	μ A
Gate-Body Leakage Current,Forward	I_{GSSF}	V_{GS} = 25 V, V_{DS} = 0 V			100	nA
Gate-Body Leakage Current,Reverse	I_{GSSR}	V_{GS} =-25 V, V_{DS} = 0 V			-100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μ A	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 4.5A		0.34	2.0	Ω
Forward Transconductance	g_{FS}	V_{DS} = 40 V, I_D = 4.5A *		4.4		S
Input Capacitance	C_{iss}			420	550	pF
Output Capacitance	C_{oss}	V_{DS} = 25 V, V_{GS} = 0 V,f = 1.0 MHz		85	110	pF
Reverse Transfer Capacitance	C_{rss}			35	45	pF
Turn-On Delay Time	$t_{d(on)}$			8	30	ns
Turn-On Rise Time	t_r	V_{DD} = 100 V, I_D = 9A,R_G=25 Ω *		75	160	ns
Turn-Off Delay Time	$t_{d(off)}$			47	110	ns
Turn-Off Fall Time	t_f			64	140	ns
Total Gate Charge	Q_g			19	25	nC
Gate-Source Charge	Q_{gs}	V_{DS} = 160 V, I_D =9A,V_{GS} = 10 V *		3		nC
Gate-Drain Charge	Q_{gd}			9.5		nC
Maximum Continuous Drain-Source Diode Forwrad Current	I_S				9	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				36	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 9A *			1.5	V
Diode Reverse Recovery Time	t_{rr}	V_{GS} = 0 V,dI_F/d_t = 100 A/ μ s,I_S=9A		150		ns
Diode Reverse Recovery Current	Q_{rr}			0.68		μ C

* Pulse Test: Pulse Width ≤ 300 μ s, Duty Cycle ≤ 2.0%