TY Semicondutor® TY

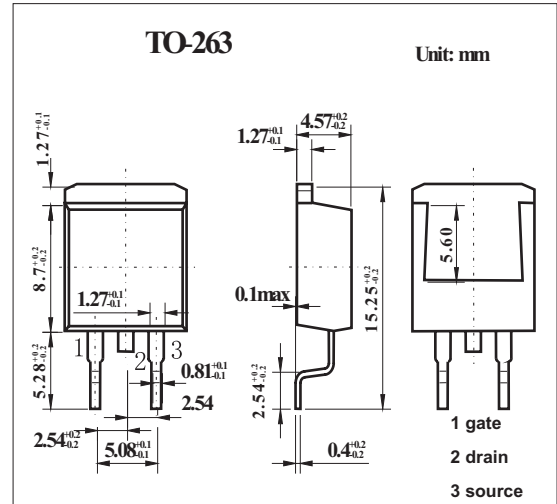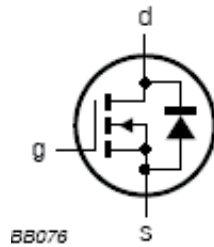# KUK7109-75ATE

TO-263 Unit: mm

1 gate
2 drain
3 source

■ Features

● Integrated temperature sensor

● Electrostatic discharge protection

● Q101 compliant

● Standard level compatible.

BB076

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	75	V
Drain-gate voltage R_{GS} = 20 KΩ	V_{DGR}	75	V
Gate-source voltage	V_{GS}	± 20	V
Drain current (DC) T_{mb} = 25℃,V_{GS} = 10 V	I_D	120	A
Drain current (DC) T_{mb} = 100℃,V_{GS} = 10 V	I_D	75	A
Drain current (pulse peak value) *1	I_{DM}	480	A
Total power dissipation T_{mb} = 25℃	P_{tot}	272	W
gate-source clamping current (continuous)	$I_{GS(CL)}$	10	mA
gate-source clamping current *3		50	mA
FET to temperature sense diode isolation voltage	$V_{isol(FET-TSD)}$	± 100	V
Storage & operating temperature	T_{stg}, T_j	-55 to 175	℃
reverse drain current (DC) T_{mb} = 25℃	I_{DR}	120	A
		75	A
pulsed reverse drain current *1	I_{DRM}	480	A
non-repetitive avalanche energy *2	$E_{DS(AL)S}$	739	J
Thermal resistance junction to mounting base	$R_{th\ j-mb}$	0.55	K/W
Thermal resistance junction to ambient	$R_{th\ j-a}$	50	K/W

* 1 T_{mb} = 25℃; pulsed; tp $\leqslant$ 10 μs;

*2 unclamped inductive load; I_D = 75 A;V_{DS} $\leqslant$ 75 V; V_{GS} = 10 V; R_{GS} = 50Ω;starting T_j = 25℃

*3 tp = 5 ms; δ = 0.01

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
drain-source breakdown voltage	V(BR)DSS	ID = 0.25 mA; VGS = 0 V;Tj = 25℃	75			V
		ID = 0.25 mA; VGS = 0 V;Tj = -55℃	70			V
gate-source threshold voltage	VGS(th)	ID = 1 mA; VDS = VGS;Tj = 25℃	2	3	4	V
		ID = 1 mA; VDS = VGS;Tj = 175℃	1			V
		ID = 1 mA; VDS = VGS;Tj = -55℃			4.4	V
Zero gate voltage drain current	IDSS	VDS = 75 V; VGS = 0 V;Tj = 25℃		0.1	10	μ A
		VDS = 75 V; VGS = 0 V;Tj = 175℃			250	μ A
gate-source breakdown voltage	V(BR)GSS	IG = ±1 mA;-55 ℃ ＜ Tj ＜ 175℃	20	22		
gate-source leakage current	IGSS	VGS = ±10 V; VDS = 0 V;Tj = 25℃		22	1000	nA
		VGS = ±10 V; VDS = 0 V;Tj = 175℃			10	μ A
drain-source on-state resistance	RDSon	VGS = 10 V; ID = 50 A;Tj = 25℃	.	8	9	m Ω
		VGS = 10 V; ID = 50 A;Tj = 175℃			19	m Ω
forward voltage; temperature sense diode	VF	IF = 250 mA	648	658	668	mV
temperature coefficient temperature sense diode	SF	IF = 250 mA;-55℃ ＜ Tj ＜175℃	-1.4	-1.54	-1.68	mV/K
temperature sense diode forward voltage hysteresis	Vhys	125 mA ＜ IF ＜ 250 mA	25	32	50	mV
total gate charge	Qg(tot)			121		nC
gate-to-source charge	Qgs	VGS = 10 V; VDD = 60 V;ID = 25 A		20		nC
gate-to-drain (Miller) charge	Qgd			44		nC
input capacitance	Ciss			4700	3760	pF
output capacitance	Coss	VGS = 0 V; VDS = 25 V;f = 1 MHz		800	665	pF
reverse transfer capacitance	Crss			455	274	pF
turn-on delay time	td(on)			35		ns
rise time	tr	VDD = 30 V; RL = 1.2Ω;VGS = 10 V; RG = 10Ω		108		ns
turn-off delay time	td(off)			185		ns
fall time	tf			100		ns
internal drain inductance	Ld	measured from upper edge of drain mounting base to center of die		2.5		nH
internal source inductance	Ls	measured from source lead to source bond pad		7.5		nH
source-drain (diode forward) voltage	VSD	Is = 25A; VGS = 0 V		0.85	1.2	V
reverse recovery time	trr	Is = 20 A; -diF/dt = -100 A/μs;		75		ns
recovered charge	Qr	VGS = -10 V; VDS = 30 V		270		nC