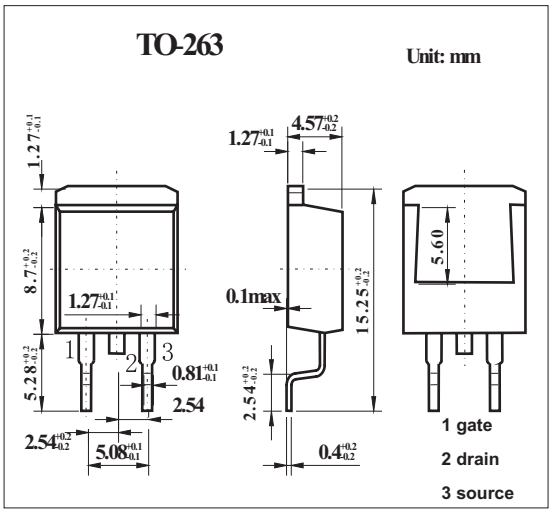
TrenchPLUS standard level FET

KUK7108-40AIE



■ Features

- ESD protection
- Integrated current sensor
- Q101 compliant
- Standard level compatible.

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	40	V
Drain-gate voltage R_{GS} = 20 KΩ	V_{DGR}	40	V
Gate-source voltage	V_{GS}	±20	V
Drain current (DC) T_{mb} = 25℃,V_{GS} = 10 V	I_D	117	A
Drain current (DC) T_{mb} = 100℃,V_{GS} = 10 V	I_D	75	A
Drain current (pulse peak value) *1	I_{DM}	468	A
Total power dissipation T_{mb} = 25℃	P_{tot}	221	W
gate-source clamping current (continuous)	$I_{GS(CL)}$	10	mA
gate-source clamping current *3		50	mA
Storage & operating temperature	T_{stg}, T_j	-55 to 175	℃
reverse drain current (DC) T_{mb} = 25℃	I_{DR}	117	A
		75	A
pulsed reverse drain current *1	I_{DRM}	468	A
non-repetitive avalanche energy *2	$E_{DS(AL)S}$	0.63	J
electrostatic discharge voltage; all pins *4	Vesd	6	kV
Thermal resistance junction to mounting base	$R_{th\ j\text{-}mb}$	0.68	K/W
Thermal resistance junction to ambient	$R_{th\ j\text{-}a}$	50	K/W

* 1 Tmb = 25℃; pulsed; tp ≤ 10 μs;

*2 unclamped inductive load; I_D = 75 A;V_{DS} ≤ 40 V; V_{GS} = 10 V; R_{GS} = 50Ω;starting Tj = 25℃

*3 tp = 5 ms; δ = 0.01

*4 Human Body Model; C = 100 pF; R = 1.5 kΩ

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
drain-source breakdown voltage	$V_{(BR)DSS}$	I_D = 0.25 mA; V_{GS} = 0 V;T_j = 25℃	40			V
		I_D = 0.25 mA; V_{GS} = 0 V;T_j = -55℃	36			V
gate-source threshold voltage	$V_{GS(th)}$	I_D = 1 mA; V_{DS} = V_{GS};T_j = 25℃	2	3	4	V
		I_D = 1 mA; V_{DS} = V_{GS};T_j = 175℃	1			V
		I_D = 1 mA; V_{DS} = V_{GS};T_j = -55℃			4.4	V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 40 V; V_{GS} = 0 V;T_j = 25℃		0.1	10	μA
		V_{DS} = 40 V; V_{GS} = 0 V;T_j = 175℃			250	μA
gate-source breakdown voltage	$V_{(BR)GSS}$	I_G = ±1 mA;-55 ℃ < T_j < 175℃	20	22		
gate-source leakage current	I_{GSS}	V_{GS} = ±10 V; V_{DS} = 0 V;Tj = 25℃		22	300	nA
		V_{GS} = ±10 V; V_{DS} = 0 V;Tj = 175℃			10	μA
drain-source on-state resistance	R_{DSon}	V_{GS} = 10 V; I_D = 50 A;Tj = 25℃	.	6	8	mΩ
		V_{GS} = 10 V; I_D = 50 A;T_j = 175℃			15.2	mΩ
drain-Isense on-state resistance	$R_{D(Is)on}$	V_{GS} = 10 V; I_D = 25 mA;Tj = 25℃	1.59	1.87	2.20	Ω
		V_{GS} = 10 V; I_D = 25 mA;T_j = 175℃	3.02	3.55	4.18	Ω
ratio of drain current to sense current	I_D/I_{sense}	V_{GS} > 10 V; R_{sense} = 0 Ω;-55 ℃ < Tj < 175℃	450	500	550	
total gate charge	$Q_{g(tot)}$	V_{GS} = 10 V; V_{DD} = 32 V;I_D = 25 A		78	84	nC
gate-to-source charge	Q_{gs}			14	16	nC
gate-to-drain (Miller) charge	Q_{gd}			34	36	nC
input capacitance	C_{iss}	V_{GS} = 0 V; V_{DS} = 25 V;f = 1 MHz		2670	3140	pF
output capacitance	C_{oss}			900	1053	pF
reverse transfer capacitance	C_{rss}			560	653	pF
turn-on delay time	$t_{d(on)}$	V_{DD} = 30 V; R_L = 1.2Ω;V_{GS} = 10 V; R_G = 10Ω		19		ns
rise time	t_r			76		ns
turn-off delay time	$t_{d(off)}$			121		ns
fall time	t_f			122		ns
internal drain inductance	L_d	measured from upper edge of drain mounting base to center of die		2.5		nH
internal source inductance	L_s	measured from source lead to source bond pad		7.5		nH
source-drain (diode forward) voltage	V_{SD}	I_s = 25A; V_{GS} = 0 V		0.85	1.2	V
reverse recovery time	t_{rr}	Is = 20 A; -d_{IF}/d_t = -100 A/μs;		55		ns
recovered charge	Q_r	V_{GS} = -10 V; V_{DS} = 30 V		30		nC