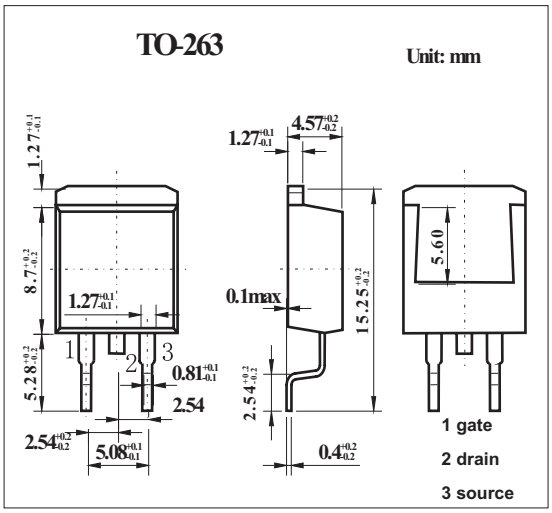
TrenchPLUS standard level FET

KUK7107-55ATE



■ Features

- Integrated temperature sensor
- ESD protection
- Q101 compliant
- Standard level compatible

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	55	V
Drain-gate voltage I_{DG} = 250 μA	V_{DGR}	55	V
Gate-source voltage	V_{GS}	±20	V
Drain current (DC) T_{mb} = 25℃,V_{GS} = 10 V	I_D	140	A
Drain current (DC) T_{mb} = 100℃,V_{GS} = 10 V	I_D	75	A
peak drain current *1	I_{DM}	560	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}	140	A
		75	A
pulsed reverse drain current *1	I_{DRM}	560	A
non-repetitive avalanche energy *2	$E_{DS(AL)S}$	460	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 Tmb = 25℃; pulsed; tp ≤ 10 μs;

*2 unclamped inductive load; I_D = 68 A;V_{DS} ≤ 55 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℃	55			V
		I_D = 0.25 mA; V_{GS} = 0 V;T_j = -55℃	50			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} = 55 V; V_{GS} = 0 V;T_j = 25℃		0.1	10	μA
		V_{DS} = 55 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		V
gate-source leakage current	I_{GSS}	V_{GS} = ±10 V; V_{DS} = 0 V;T_j = 25℃		22	1000	nA
		V_{GS} = ±10 V; V_{DS} = 0 V;T_j = 175℃			10	μA
drain-source on-state resistance	R_{DSon}	V_{GS} = 10 V; I_D = 50 A;T_j = 25℃	.	5.8	7	mΩ
		V_{GS} = 10 V; I_D = 50 A;T_j = 175℃			14	mΩ
forward voltage, temperature sense diode	V_F	I_F = 250 mA	648	658	668	mV
temperature coefficient temperature sense diode	S_F	I_F = 250 mA;-55℃ < T_j <175℃	-1.4	-1.54	-1.68	mV/K
temperature sense diode forward voltage hysteresis	V_{hys}	125 μA < I_F <250 μA	25	32	50	mV
total gate charge	$Q_{g(tot)}$	V_{GS} = 10 V; V_{DD} = 44 V;I_D = 25 A		116		nC
gate-to-source charge	Q_{gs}			19		nC
gate-to-drain (Miller) charge	Q_{gd}			50		nC
input capacitance	C_{iss}	V_{GS} = 0 V; V_{DS} = 25 V;f = 1 MHz		4500		pF
output capacitance	C_{oss}			960		pF
reverse transfer capacitance	C_{rss}			510		pF
turn-on delay time	$t_{d(on)}$	V_{DD} = 30 V; R_L = 1.2Ω;V_{GS} = 10 V; R_G = 10Ω		36		ns
rise time	t_r			115		ns
turn-off delay time	$t_{d(off)}$			159		ns
fall time	t_f			111		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}	I_S = 20 A; dI_F/dt = -100 A/μs;		80		ns
recovered charge	Q_r	V_{GS} = -10 V; V_{DS} = 30 V		200		nC