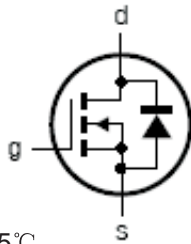
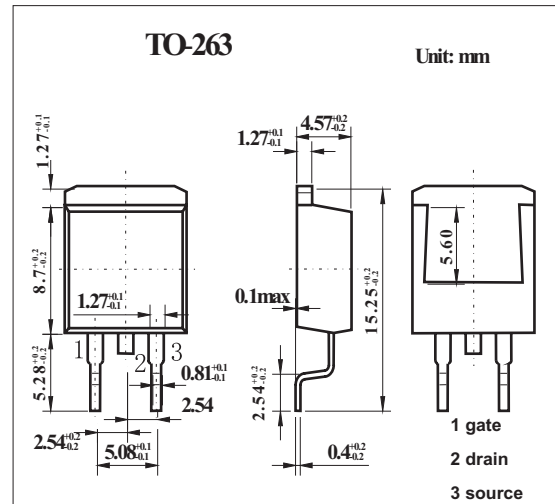


## TrenchMOS™ standard level FET

## KUK7606-55B

## ■ Features

- Very low on-state resistance
- Q101 compliant
- 175°C rated
- Standard level compatible.

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	55	V
Drain-gate voltage $R_{GS} = 20\text{ K}\Omega$	$V_{DGR}$	55	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Drain current (DC) $T_{mb} = 25^\circ\text{C}, V_{GS} = 10\text{ V}$	$I_D$	145	A
Drain current (DC) $T_{mb} = 100^\circ\text{C}, V_{GS} = 10\text{ V}$	$I_D$	75	A
Drain current (pulse peak value) *1	$I_{DM}$	582	A
Total power dissipation $T_{mb} = 25^\circ\text{C}$	$P_{tot}$	254	W
Storage & operating temperature	$T_{stg}, T_j$	-55 to 175	$^\circ\text{C}$
reverse drain current (DC) $T_{mb} = 25^\circ\text{C}$	$I_{DR}$	145	A
		75	A
pulsed reverse drain current *1	$I_{DRM}$	582	A
non-repetitive avalanche energy *2	$E_{DS(AL)S}$	680	J
Thermal resistance junction to mounting base	$R_{th\ j-mb}$	0.59	K/W
Thermal resistance junction to ambient	$R_{th\ j-a}$	50	K/W

\* 1  $T_{mb} = 25^\circ\text{C}$ ; pulsed;  $t_p \leq 10\ \mu\text{s}$ ;

\*2 unclamped inductive load;  $I_D = 75\text{ A}$ ;  $V_{DS} \leq 55\text{ V}$ ;  $V_{GS} = 10\text{ V}$ ;  $R_{GS} = 50\ \Omega$ ; starting  $T_{mb} = 25^\circ\text{C}$

## KUK7606-55B

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
drain-source breakdown voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> = 0.25 mA; V <sub>GS</sub> = 0 V; T <sub>J</sub> = 25°C	55			V
		I <sub>D</sub> = 0.25 mA; V <sub>GS</sub> = 0 V; T <sub>J</sub> = -55°C	50			V
gate-source threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> = 1 mA; V <sub>DS</sub> = V <sub>GS</sub> ; T <sub>J</sub> = 25°C	2	3	4	V
		I <sub>D</sub> = 1 mA; V <sub>DS</sub> = V <sub>GS</sub> ; T <sub>J</sub> = 175°C	1			V
		I <sub>D</sub> = 1 mA; V <sub>DS</sub> = V <sub>GS</sub> ; T <sub>J</sub> = -55°C			4.4	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = 30 V; V <sub>GS</sub> = 0 V; T <sub>J</sub> = 25°C		0.02	1	μA
		V <sub>DS</sub> = 30 V; V <sub>GS</sub> = 0 V; T <sub>J</sub> = 175°C			500	μA
gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20 V; V <sub>DS</sub> = 0 V		2	100	nA
drain-source on-state resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V; I <sub>D</sub> = 25 A; T <sub>J</sub> = 25°C		5.1	6	mΩ
		V <sub>GS</sub> = 10 V; I <sub>D</sub> = 25 A; T <sub>J</sub> = 175°C			12	mΩ
total gate charge	Q <sub>g(tot)</sub>			64		nC
gate-to-source charge	Q <sub>gs</sub>	V <sub>GS</sub> = 10 V; V <sub>DD</sub> = 44 V; I <sub>D</sub> = 25 A		14		nC
gate-to-drain (Miller) charge	Q <sub>gd</sub>			19		nC
input capacitance	C <sub>iss</sub>			3825	5100	pF
output capacitance	C <sub>oss</sub>	V <sub>GS</sub> = 0 V; V <sub>DS</sub> = 25 V; f = 1 MHz		783	940	pF
reverse transfer capacitance	C <sub>rss</sub>			235	322	pF
turn-on delay time	t <sub>d(on)</sub>			30		ns
rise time	t <sub>r</sub>	V <sub>DD</sub> = 30 V; R <sub>L</sub> = 1.2Ω; V <sub>GS</sub> = 10 V; R <sub>G</sub> = 10 Ω		46		ns
turn-off delay time	t <sub>d(off)</sub>			85		ns
fall time	t <sub>f</sub>			39		ns
internal drain inductance	L <sub>d</sub>	from drain lead 6 mm from package to centre of die		4.5		nH
				2.5		nH
internal source inductance	L <sub>s</sub>	from source lead to source bond pad		7.5		nH
source-drain (diode forward) voltage	V <sub>SD</sub>	I <sub>S</sub> = 25 A; V <sub>GS</sub> = 0 V		0.85	1.2	V
reverse recovery time	t <sub>rr</sub>	I <sub>S</sub> = 20 A; -di <sub>F</sub> /dt = -100 A/μs;		73		ns
recovered charge	Q <sub>r</sub>	V <sub>GS</sub> = -10 V; V <sub>DS</sub> = 30 V		82		nC