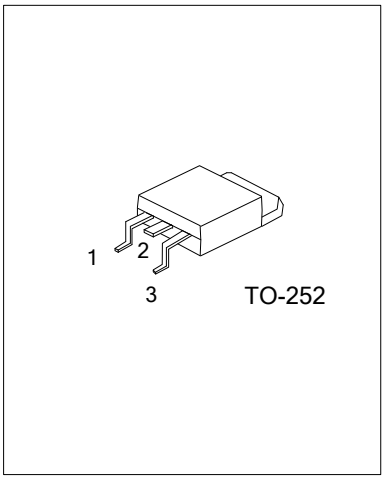
N-Channel Power MOSFET



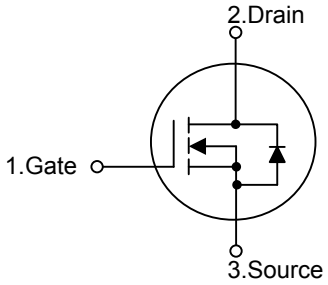
● Description

The FL12N10 is an N-channel mode power MOSFET using UTC's advanced technology to provide customers with minimum on-state resistance for extremely high dense cell design, rugged avalanche characteristics and less critical alignment steps .

● Features:

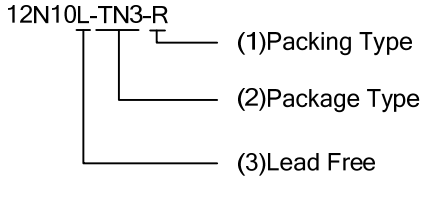
* $R_{DS(on)}$ < 0.10Ω @V_{GS} = 10 V
  $R_{DS(on)}$ < 0.12Ω @V_{GS} = 5.0 V
* High switching speed
* Low gate charge

SYMBOL



● ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
12N10L-TN3-R	12N10G-TN3-R	TO-252	G	D	S	Tape Reel
12N10L-TN3-T	12N10G-TN3-T	TO-252	G	D	S	Tube



(1) R: Tape Reel, T: Tube
(2) TN3: TO-252
(3) G: Halogen Free, L: Lead Free

N-Channel Power MOSFET

● ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage (V_{GS}=0)			V_{DSS}	100	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous	T_C = 25°C	I_D	12	A
		T_C = 100°C		8.5	A
	Pulsed (Note 2)		I_{DM}	48	A
Power Dissipation			P_D	30	W
Derating Factor				0.2	W/°C
Avalanche Energy (Note 3)			E_{AS}	100	mJ
Junction Temperature			T_J	+150	°C
Storage Temperature			T_{STG}	-55 ~ +150	°C

Note: 1 Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width limited by safe operating area
3. Starting T_J = 25°C, I_D = 12A, V_{DD} = 50V

● THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	100	°C/W
Junction to Case	θ_{JC}	5	°C/W

● ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=Max rating, V_{GS}=0V			1	μA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1		3	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=6A		0.15	0.18	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		430		pF
Output Capacitance		C_{OSS}			90		pF
Reverse Transfer Capacitance		C_{RSS}			20		pF

● ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SWITCHING PARAMETERS (Note 1,2)						
Total Gate Charge	Q_G	V_{GS}=10V, V_{DD}=80V, I_D=12A		7.5	10	nC
Gate to Source Charge	Q_{GS}			2.5		nC
Gate to Drain Charge	Q_{GD}			3.0		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=30V, I_D=1A, R_G=9.1Ω, V_{GS}=10V (Fig. 1)		12	24	ns
Rise Time	t_R			7	14	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			18	35	ns
Fall-Time	t_F			3	6	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S				12	A
Maximum Body-Diode Pulsed Current	I_{SM}				48	A
Drain-Source Diode Forward Voltage (Note 1)	V_{SD}	I_S=12A, V_{GS}=0V			1.2	V

Notes: 1. Pulsed: pulse duration=300μs, duty cycle 1.5%

2. Essentially independent of operating temperature