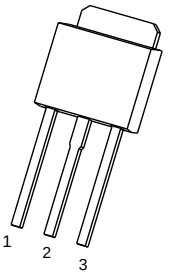
P-Channel Power MOSFET

TO-251-3L



1. GATE
2. DRAIN
3. SOURCE

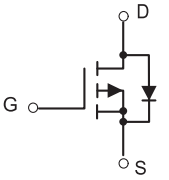
GENERAL DESCRIPTION

The FTK15P06I uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

FEATURE

- Advanced trench process technology
- Reliable and rugged
- High density cell design for ultra low On-Resistance

EQUIVALENT CIRCUIT



APPLICATION

- Power management in notebook computer
- Portable equipment and battery powered systems

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D①	-15	A
Pulsed Drain Current	I_{DM}②	-55	A
Single Pulsed Avalanche Energy	E_{AS}③	156	mJ
Power Dissipation	P_D①	75	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$⑥	100	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$①	1.66	℃/W
Operating Junction and Storage Temperature Range	T_J ,T_{stg}	-55~+150	℃

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T_a=25℃ unless otherwise specified

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =-250μA		-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-48V, V_{GS} =0V	T_J =25℃			1.0	μA
			T_J =125℃			100	
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V				±100	nA
On characteristics ④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA		-1.0	-1.7	-2.5	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-20A			62	80	mΩ
Dynamic characteristics ④⑤							
Input capacitance	C_{iss}	V_{DS} =-25V,V_{GS} =0V, f =1MHz			3150	4500	pF
Output capacitance	C_{oss}				505	780	
Reverse transfer capacitance	C_{rss}				215	360	
Gate resistance	Rg	f =1MHz			5.7		Ω
Switching characteristics ④⑤							
Total gate charge	Q_g	V_{GS}=-10V, V_{DS}=-30V, I_D=-20A			72	130	nC
Gate-source charge	Q_{gs}				15	29	
Gate-drain charge	Q_{gd}				17	32	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-30V,R_G=3Ω R_L=1.5Ω,V_{GS}=-10V,			16	30	ns
Turn-on rise time	t_r				18	35	
Turn-off delay time	$t_{d(off)}$				39	78	
Turn-off fall time	t_f				44	87	
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=-20A				-1.2	V
Continuous drain-source diode forward current	I_S ①					-20	A
Pulsed drain-source diode forward current	I_{SM} ②					-85	A

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=-15V,V_{GS}=-10V, L=0.5mH, R_g=25Ω Starting T_J = 25℃.

4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

6.The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25℃.

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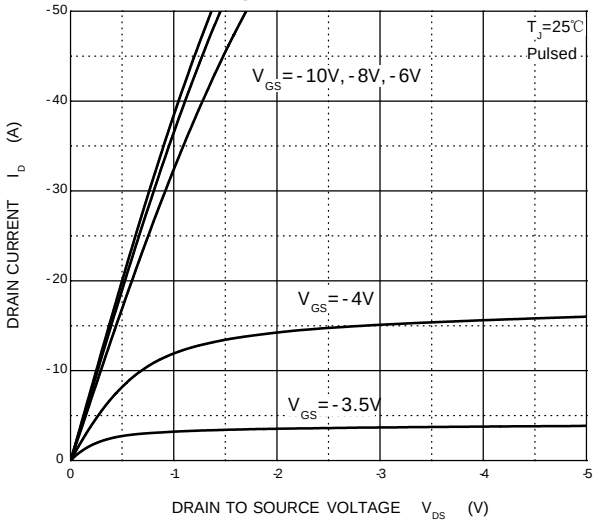
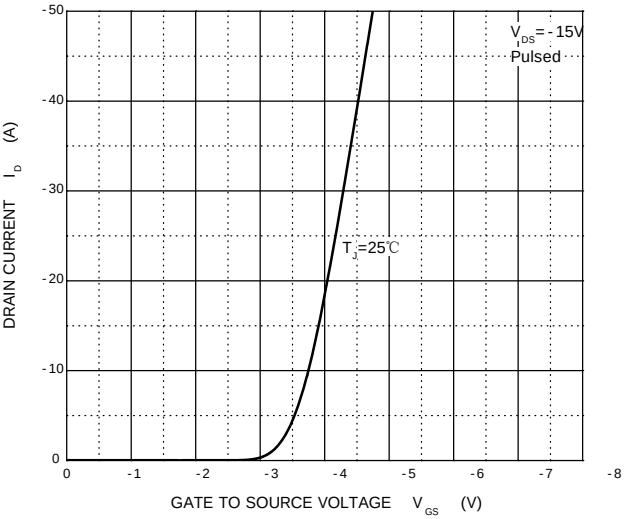
Typical Characteristics

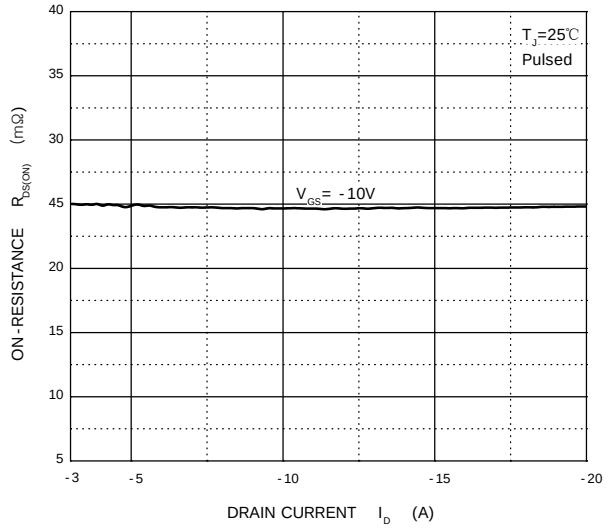
Output Characteristics



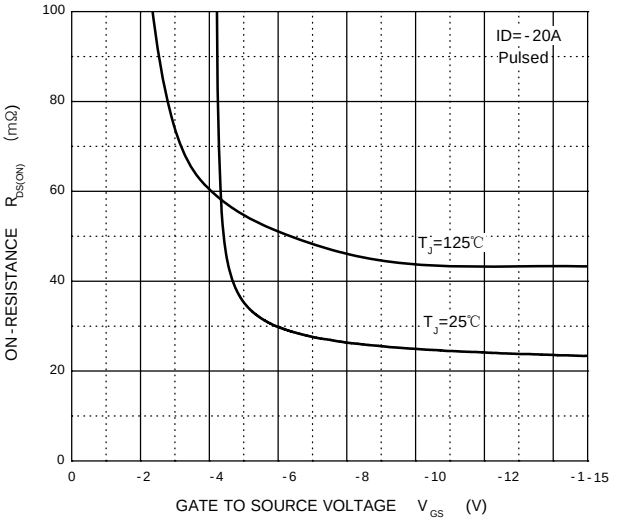
Transfer Characteristics



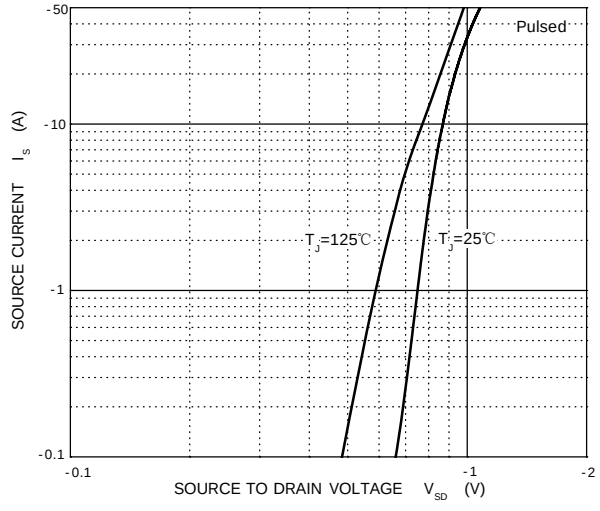
$R_{DS(ON)}$ —— I_D



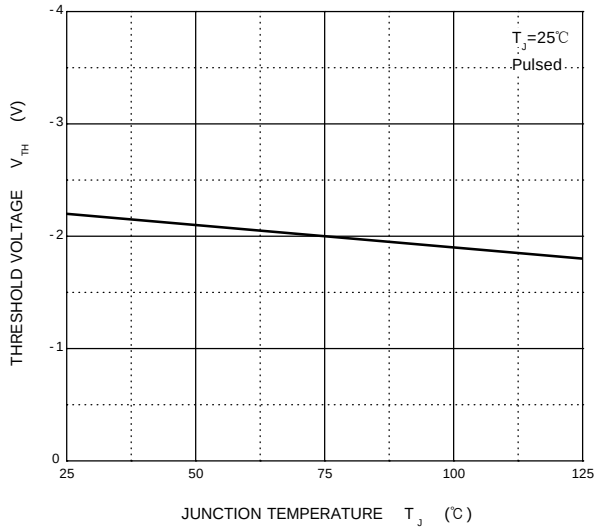
$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage



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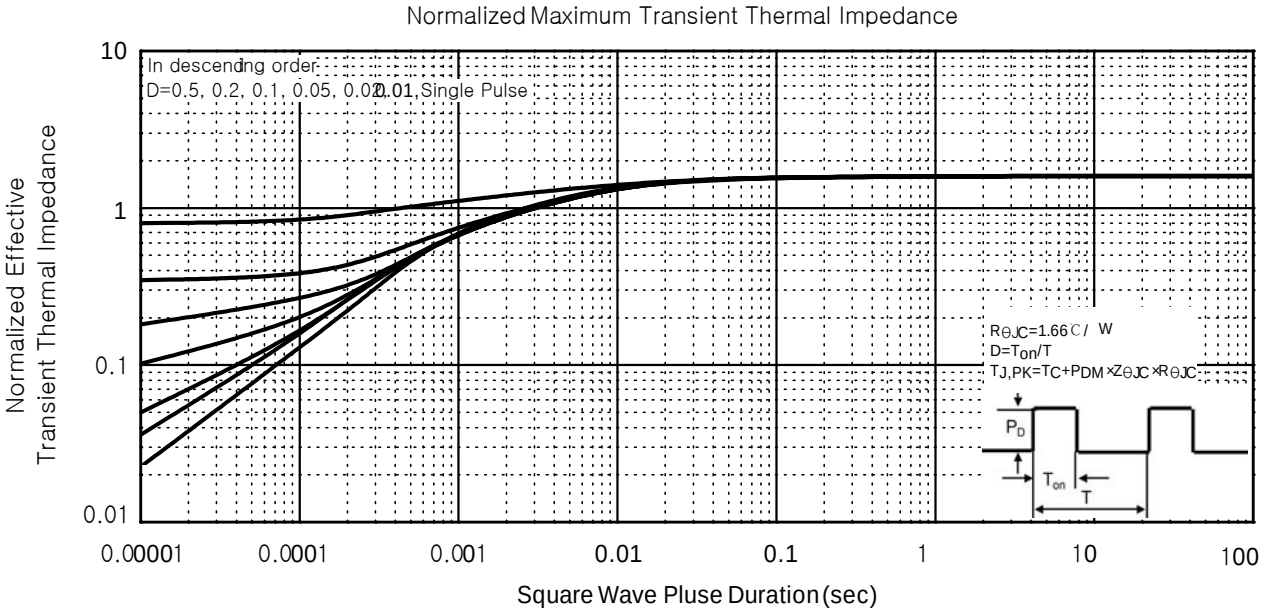
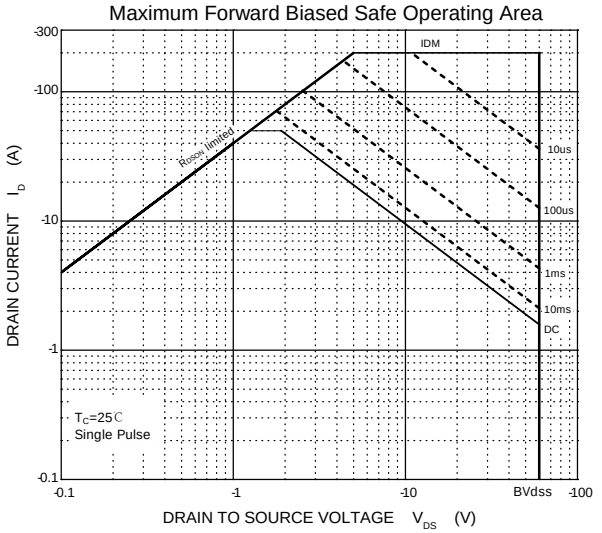
Typical Characteristics





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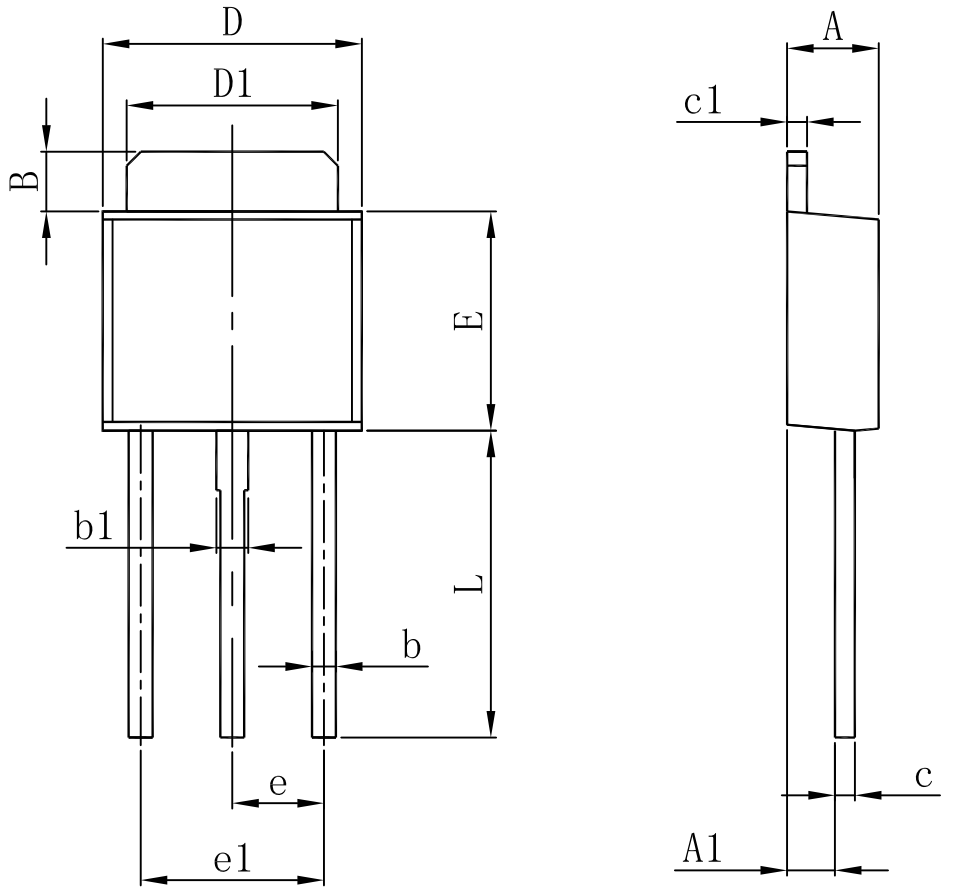
TO-251-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311