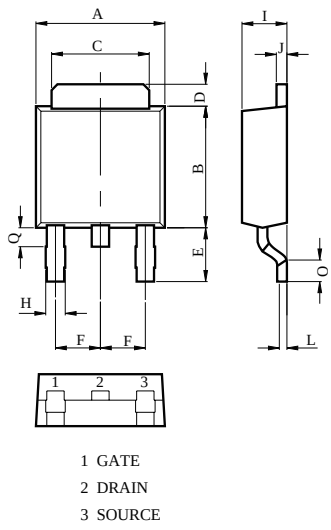
N-Channel MOSFET

DESCRIPTION

The FTK410D uses advanced trench te chnology to provide excellent $R_{DS(ON)}$ and low gate charge.
This device is suitable for use as a load switch or in PWM applications.

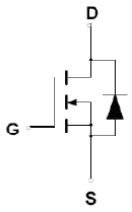


DIM	MILLIMETERS
A	6 50 ± 0 2
B	5 60 ± 0 2
C	5 20 ± 0 2
D	1 50 ± 0 2
E	2 70 ± 0 2
F	2 30 ± 0 1
H	1 00 MAX
I	2 30 ± 0 2
J	0 5 ± 0 1
L	0 50 ± 0 10
O	1 6 ± 0 2
Q	0 95 MAX

D-PAK (TO-252)

FEATURES

VDS (V) = 30V
ID = 36A (VGS = 10V)
RDS(ON) < 13mΩ (VGS = 10V)
RDS(ON) < 20mΩ (VGS = 4.5V)



ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (t ≤10s) (note 1)	I_D	36	A
Pulsed Drain Current (note 2)	I_{DM}	144	A
Power Dissipation @ TC = 25 C	P_D	42	W
Thermal Resistance from Junction to Ambient (t ≤10s) (note 1)	$R_{\theta JA}$	50	℃/W
Thermal Resistance, Junction-to-Case (note 2)	$R_{\theta JC}$	3	℃/W
Junction Temperature	T_J	-55~+150	℃
Storage Temperature	T_{STG}	-55~+150	℃

Electrical characteristics (T_a=25℃ unlessss otherwise noted)

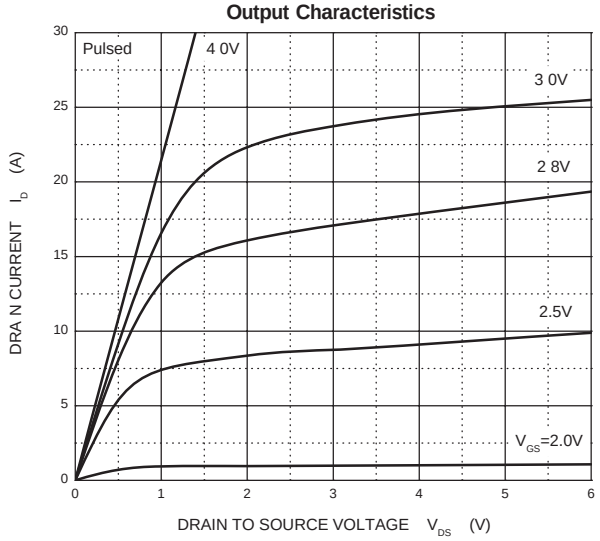
Parameter	Symbol	Test Co ndition	Min	Typ	Max	Unit
Static Characteristics						
Drain Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0		3.0	V
Drain-Source on-state Resistance (note 2)	$R_{DS(on)}$	V_{GS} =10V, I_D =10A			13.5	mΩ
		V_{GS} =4.5V, I_D =5A			20	
Forward Transconductance (note 2)	g_{fs}	V_{DS} =15V, I_D =5A		8		S
Diode Forward Voltage (note 2)	V_{SD}	I_S=2.3A,V_{GS}=0V			1.1	V
Dynamic Characteristics (note 3)						
Gate Charge	Q_g	V_{DS} =15V,V_{GS} =5V,I_D =10A			20	nC
Total Gate Charge	Q_{gt}	V_{DS} =15V,V_{GS} =10V,I_D =10A			40	
Gate-Source Charge	Q_{gs}			5.5		
Gate-Drain Charge	Q_{gd}			3.7		
Gate Resistance	R_g	f =1MHz	0.5		2.7	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=25V,R_L=25Ω, I_D ≈1A, V_{GEN}=10V,R_G=6Ω			15	ns
Rise Time	t_r				15	
Turn-Off Delay Time	$t_{d(off)}$				60	
Fall Time	t_f				25	

Notes :

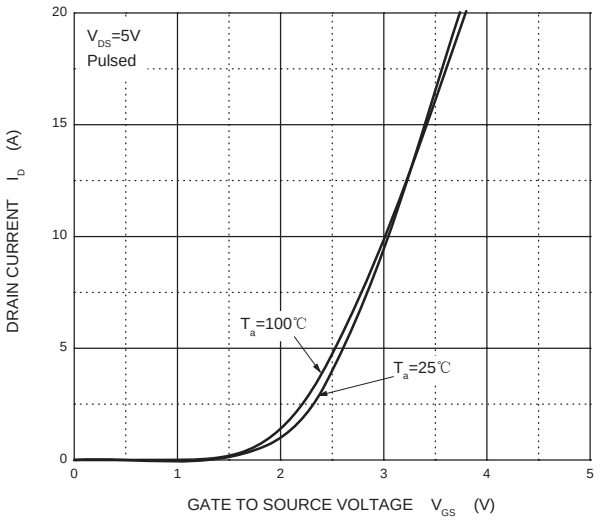
1. The value of $R_{\theta JA}$ is measure with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25℃. The value in any given application depends on the user's specific board design. The current rating is based on the t≤10s thermal resistance rating.
2. Repetitive rating : Pulse width limited by junction temperature.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

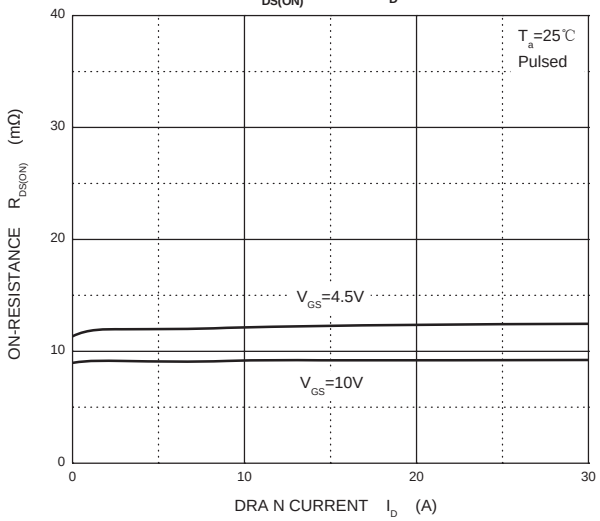
Output Characteristics



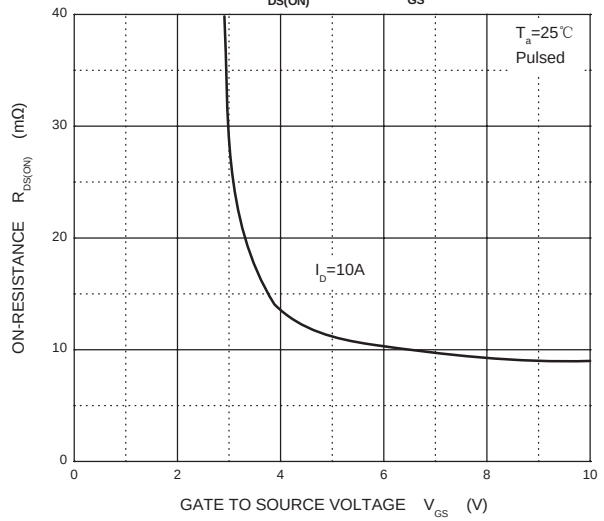
Transfer Characteristics



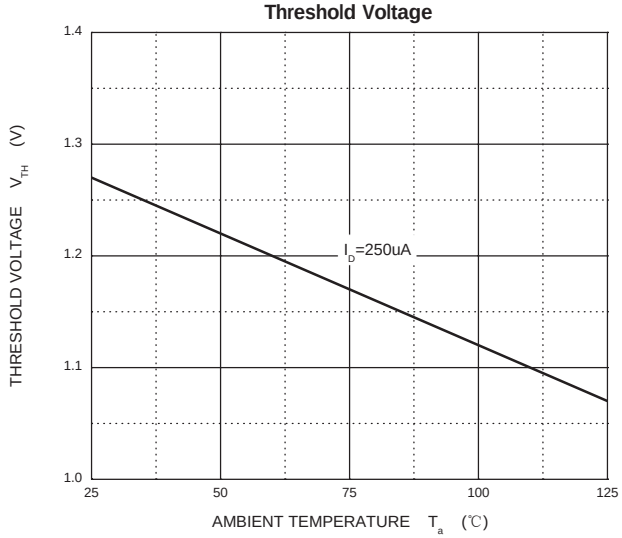
$R_{DS(ON)}$ — I_D



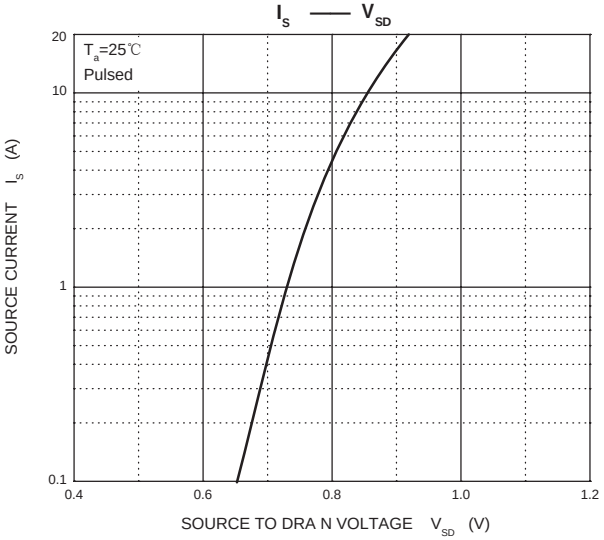
$R_{DS(ON)}$ — V_{GS}



Threshold Voltage



I_S — V_{SD}



Typical Characteristics

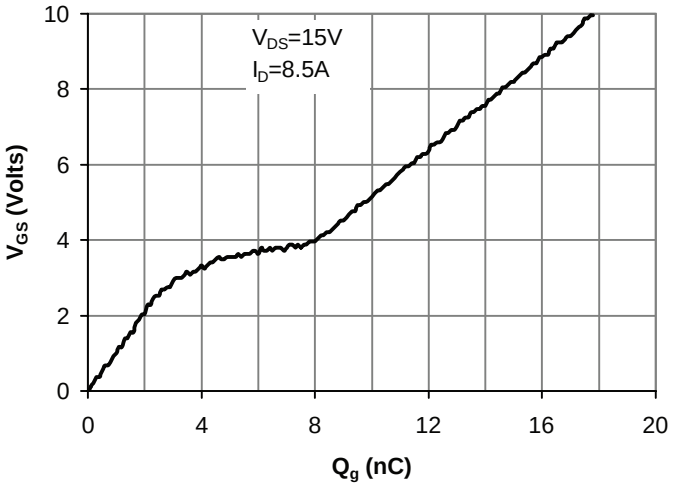


Figure 7: Gate-Charge Characteristics

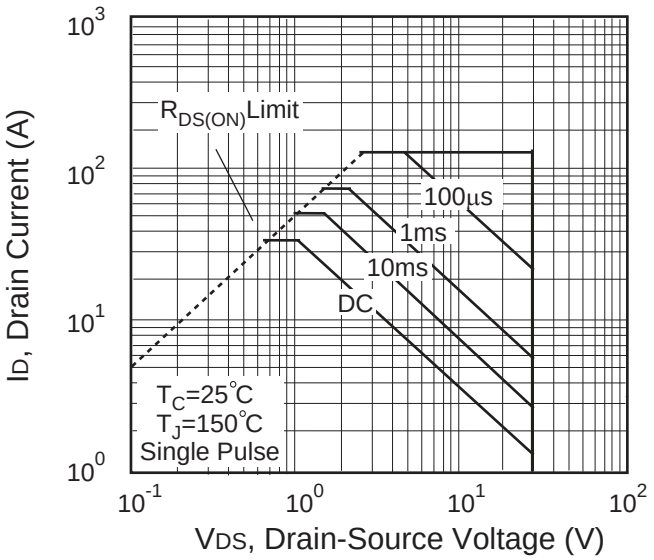


Figure 8. Maximum Safe Operating Area

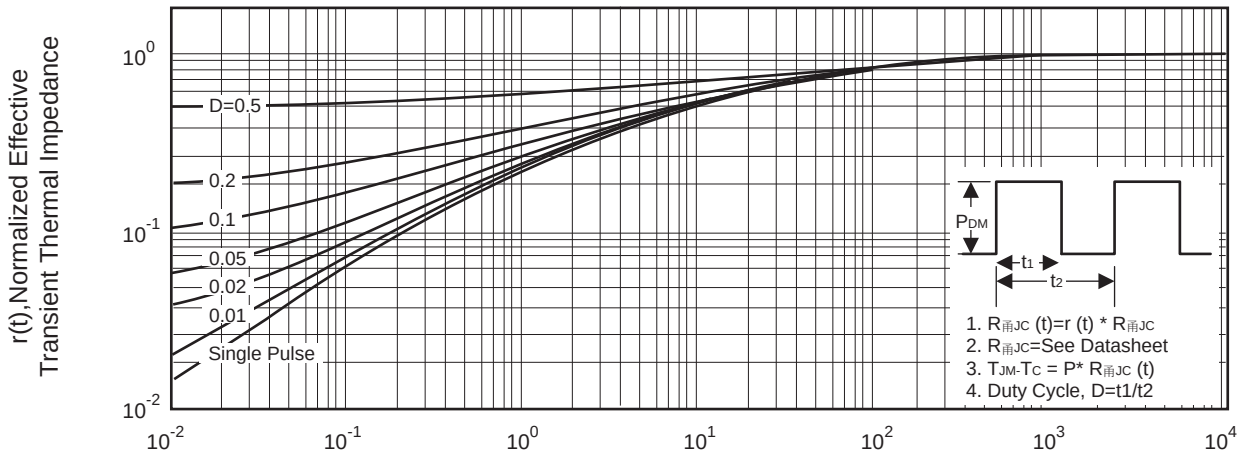


Figure 9. Normalized Thermal Transient Impedance Curve