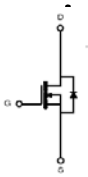
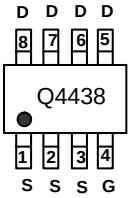
FTK4438

DESCRIPTION

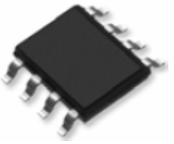
The FTK4438 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.



Schematic diagram



Marking and pin Assignment



SOP-8 top view

GENERAL FEATURES

- V_{DS} = 60V, I_D = 8.2A
  $R_{DS(ON)}$ < 30mΩ @ V_{GS}=4.5V
  $R_{DS(ON)}$ < 22mΩ @ V_{GS}=10V
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- Battery protection
- Load switch
- Power management

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
Q4438	FTK4438	SOP-8	Ø330mm	12mm	2500 units

ABSOLUTE MAXIMUM RATINGS(TA=25℃unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (note 1)	I_D	8.2	A
Pulsed Drain Current (note 2)	I_{DM}	40	A
Power Dissipation	P_D	1.25	W
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃

Electrical characteristics (T_a=25℃ unless otherwise noted)

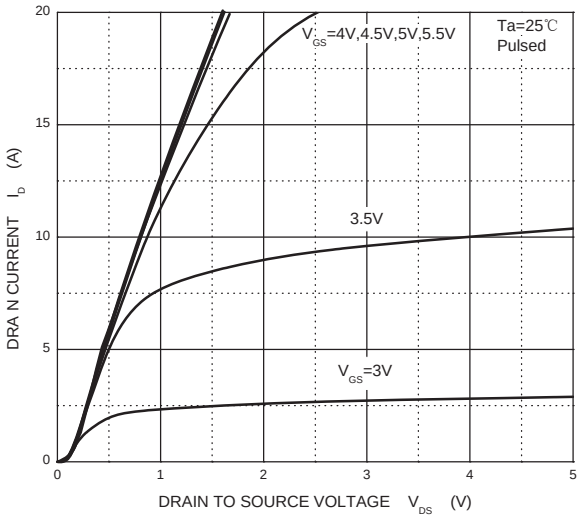
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1		3	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	V_{GS} =10V, I_D =8.2A			22	mΩ
		V_{GS} =4.5V, I_D =7.6A			30	mΩ
Forward tranconductance (note 3)	g_{fs}	V_{DS} =5V, I_D =8.2A	10			S
Diode forward voltage (note 3)	V_{SD}	I_S=1A, V_{GS} = 0V			1	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz			2300	pF
Output Capacitance	C_{oss}			155		pF
Reverse Transfer Capacitance	C_{rss}			116		pF
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=30V R_L=3.6Ω,R_{GEN}=3Ω		8.2		ns
Turn-on rise time	t_r			5.5		ns
Turn-off delay time	$t_{d(off)}$			29.7		ns
Turn-off fall time	t_f			5.2		ns
Total Gate Charge (10V)	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =8.2A			58	nC
Total Gate Charge (4.5V)					30	nC
Gate-Source Charge	Q_{gs}			6		nC
Gate-Drain Charge	Q_{gd}			14.4		nC

Notes :

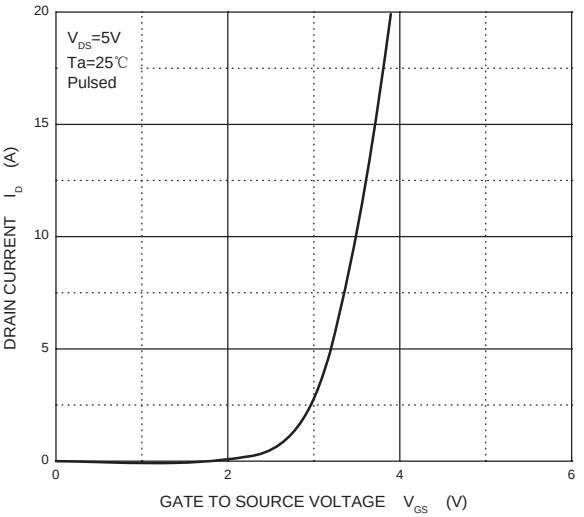
1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 2oz. Copper, in a still air environment with T_a=25℃.The value in any given application depends on the user's specific board design. The current rating is based on the t ≤10s thermal resistance rating.
2. Repetitive rating : Pulse width limited by junction temperature.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.
4. These parameters have no way to verify.

Typical Characteristics

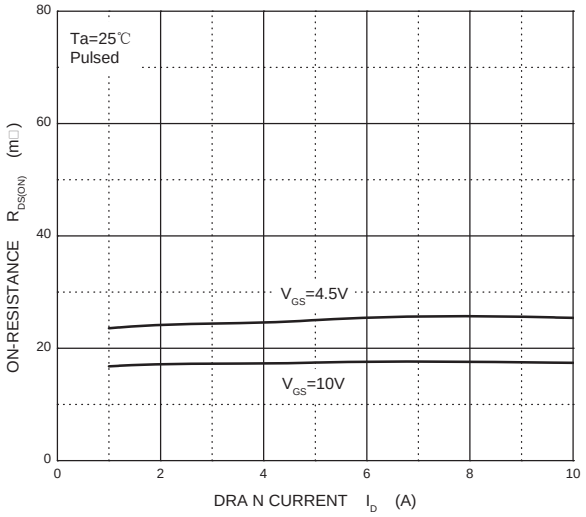
Output Characteristics



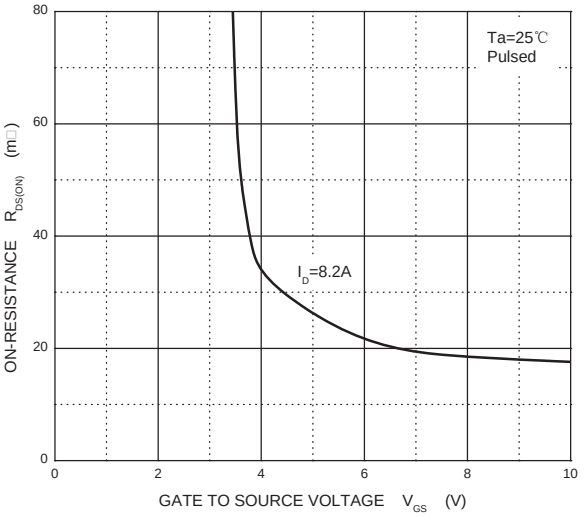
Transfer Characteristics



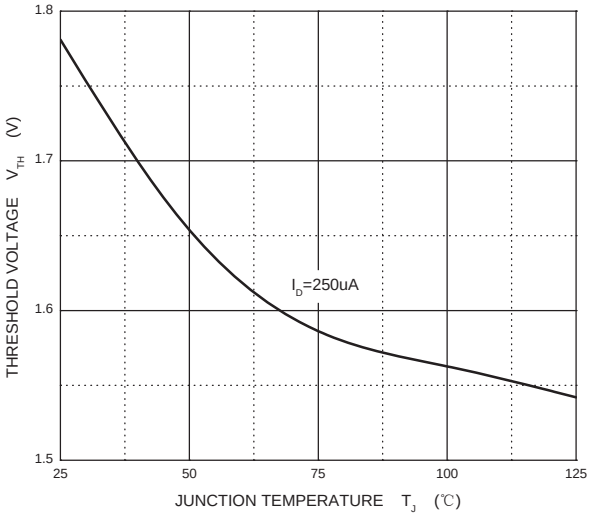
$R_{DS(ON)}$ —— I_D



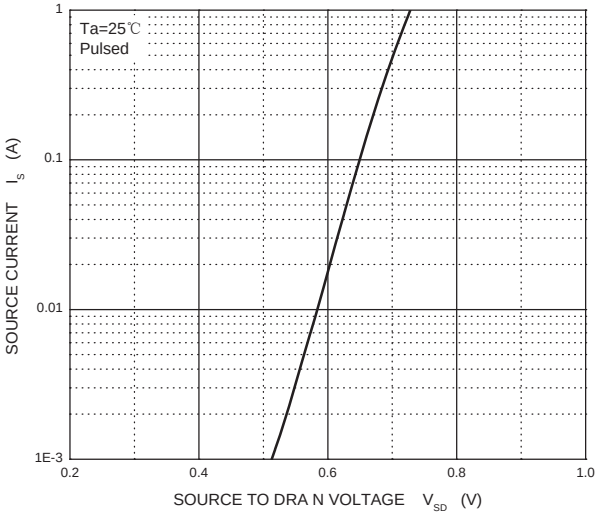
$R_{DS(ON)}$ —— V_{GS}



Threshold Voltage

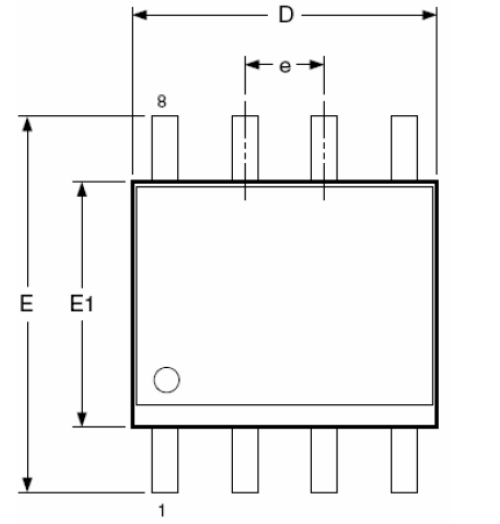


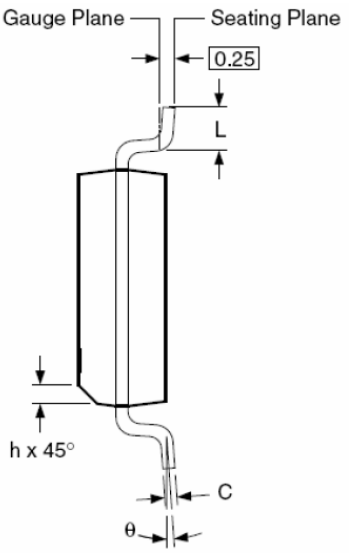
I_S —— V_{SD}

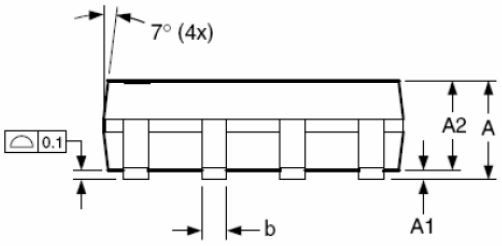


SOP-8 PACKAGE INFORMATION

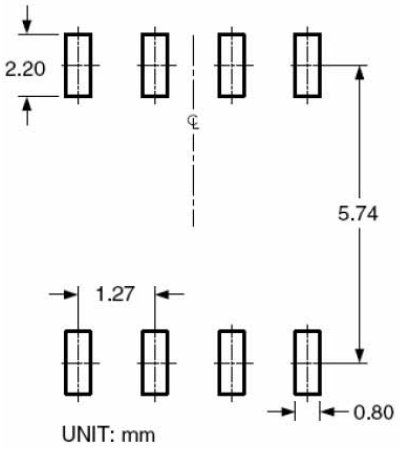
Dimensions in Millimeters (UNIT:mm)







RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	1.35	1.65	1.75
A1	0.10	—	0.25
A2	1.25	1.50	1.65
b	0.31	—	0.51
c	0.17	—	0.25
D	4.80	4.90	5.00
E1	3.80	3.90	4.00
e	1.27 BSC		
E	5.80	6.00	6.20
h	0.25	—	0.50
L	0.40	—	1.27
θ	0°	—	8°

Dimensions in inches

Symbols	Min.	Nom.	Max.
A	0.053	0.065	0.069
A1	0.004	—	0.010
A2	0.049	0.059	0.065
b	0.012	—	0.020
c	0.007	—	0.010
D	0.189	0.193	0.197
E1	0.150	0.154	0.157
e	0.050 BSC		
E	0.228	0.236	0.244
h	0.010	—	0.020
L	0.016	—	0.050
θ	0°	—	8°

NOTES:

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.