

20V N-Channel MOSFET

1. FEATURES

- VDS = 20V
 $R_{DS(ON)} \leq 10.9m\Omega$ (max.) VGS=4.5V
 $R_{DS(ON)} \leq 15.5m\Omega$ (max.) VGS=2.5V
- Low RDS(ON) trench technology.
- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

2. APPLICATIONS

- Load Switches
- DC/DC Conversion
- Motor Drives

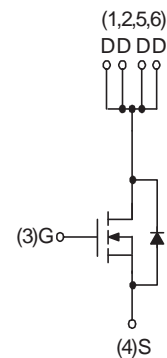
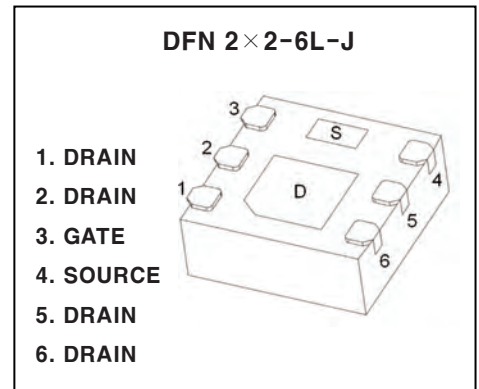
3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
FTK2206DFN22	2206A	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit	
Drain-Source Voltage	VDS	20	V	
Gate-Source Voltage	VGS	±12		
Continuous Drain Current (Note1)	ID	9.0	A	
Pulsed Drain Current (Note2)	IDM	36		
Continuous Source Current (Diode Conduction) (Note1)	IS	1.2		
Power Dissipation (Note1)	PD	TA = 25°C	1.4	W
		TA = 70°C	0.9	
Operating Junction and Storage Temperature Range	TJ , Tstg	-55~+150	°C	
Maximum Junction-to-Ambient (Note1)	RqJA	t ≤ 10 sec	54	°C/W
		Steady State	90	

Note: 1. Surface Mounted on 1" x 1" FR4 Board.
 2. Pulse width limited by maximum junction temperature



N- Channel MOSFET



5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

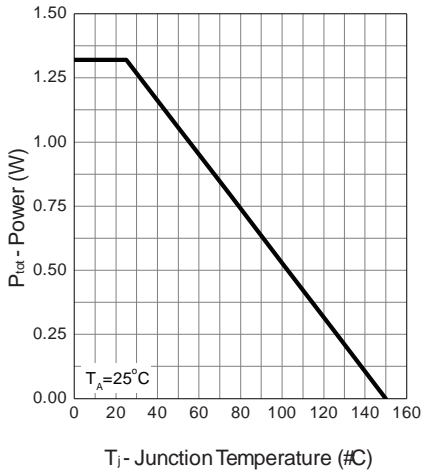
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$ $T_J=85^\circ C$	-	-	1	μA
			-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	0.75	1	V
I_{GSS}	Gate Leakage Current	$V_{GS}=12V, V_{DS}=0V$	-	-	100	nA
$R_{DS(ON)}^d$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=9A$ $T_J=125^\circ C$	-	9.1	10.9	m Ω
			-	12.5	-	
			$V_{GS}=2.5V, I_{DS}=8A$	-	12.1	
		$V_{GS}=1.8V, I_{DS}=7.3A$	-	19	29	
Gfs	Forward Transconductance	$V_{DS}=5V, I_{DS}=8A$	-	24	-	S
Diode Characteristics						
V_{SD}^d	Diode Forward Voltage	$I_{SD}=1.5A, V_{GS}=0V$	-	0.72	1.1	V
t_{rr}	Reverse Recovery Time	$V_{DD}=15V,$ $F_{WD}=5A$	-	10.2	-	ns
Q_{rr}	Reverse Recovery Charge	$I_{induct}=0.1mH$	-	4.1	-	nC
Dynamic Characteristics						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	-	1.5	2.7	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz	-	780	1015	pF
C_{oss}	Output Capacitance		-	170	-	
C_{rss}	Reverse Transfer Capacitance		-	120	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=10V, R_L=10\Omega,$ $I_{DS}=1A, V_{GEN}=4.5V,$ $R_G=1\Omega$	-	10.6	-	ns
t_r	Turn-on Rise Time		-	15	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	17.2	-	
t_f	Turn-off Fall Time		-	4	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	$V_{ds}=10V, V_{gs}=4.5V,$ $I_{ds}=9A$	-	8.9	11.5	nC
Q_{gs}	Gate-Source Charge		-	0.52	-	
Q_{gd}	Gate-Drain Charge		-	3.8	-	

Note d Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

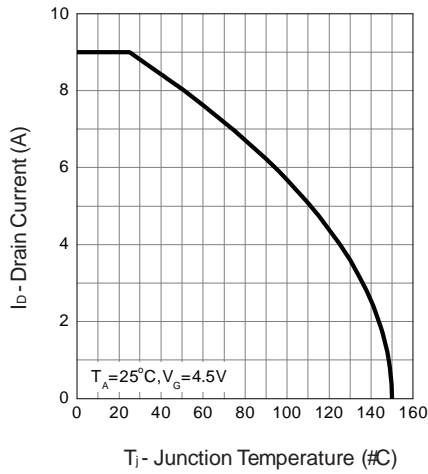


6.ELECTRICAL CHARACTERISTICS CURVES

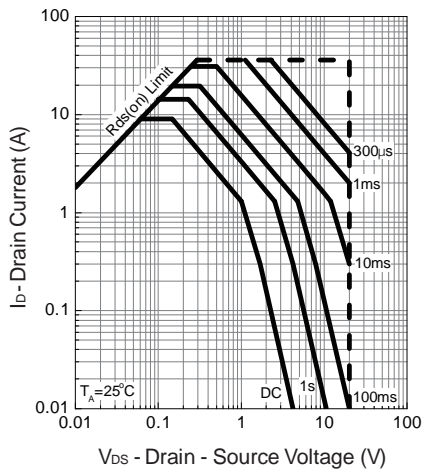
Power Dissipation



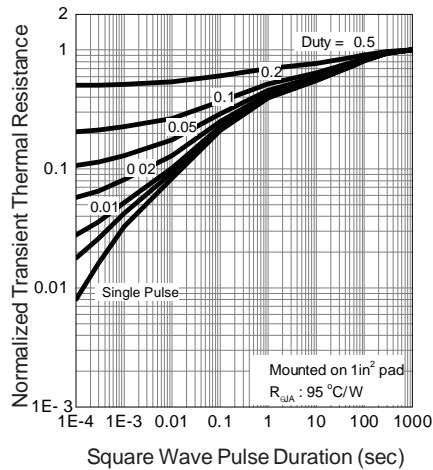
Drain Current



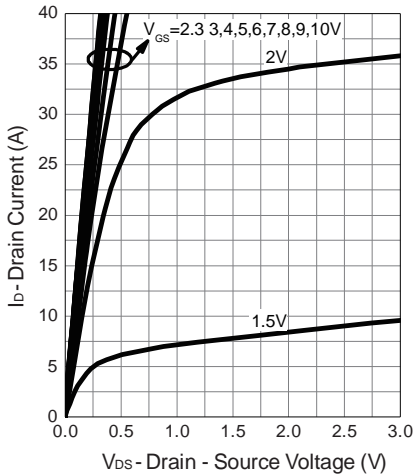
Safe Operation Area



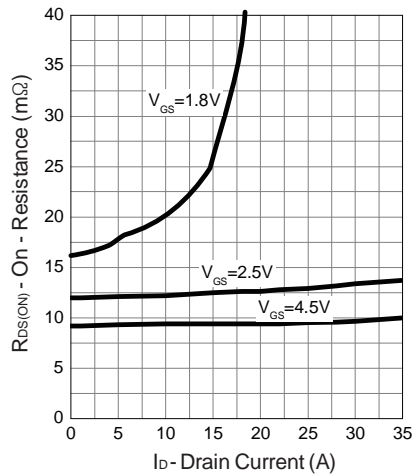
Thermal Transient Impedance



Output Characteristics

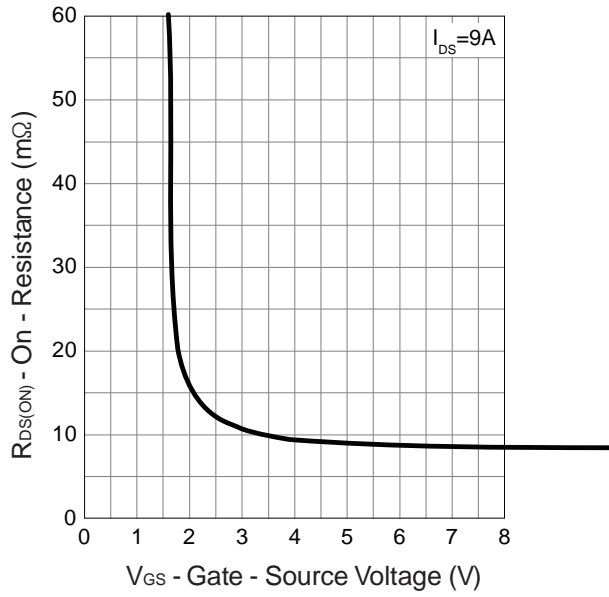


Drain-Source On Resistance

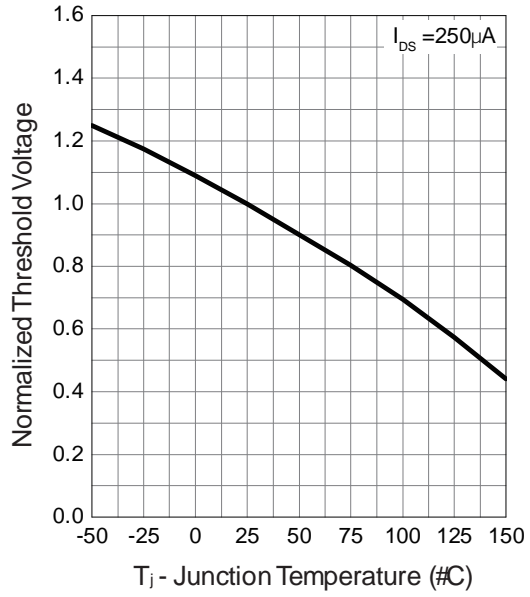


6. ELECTRICAL CHARACTERISTICS CURVES (Con.)

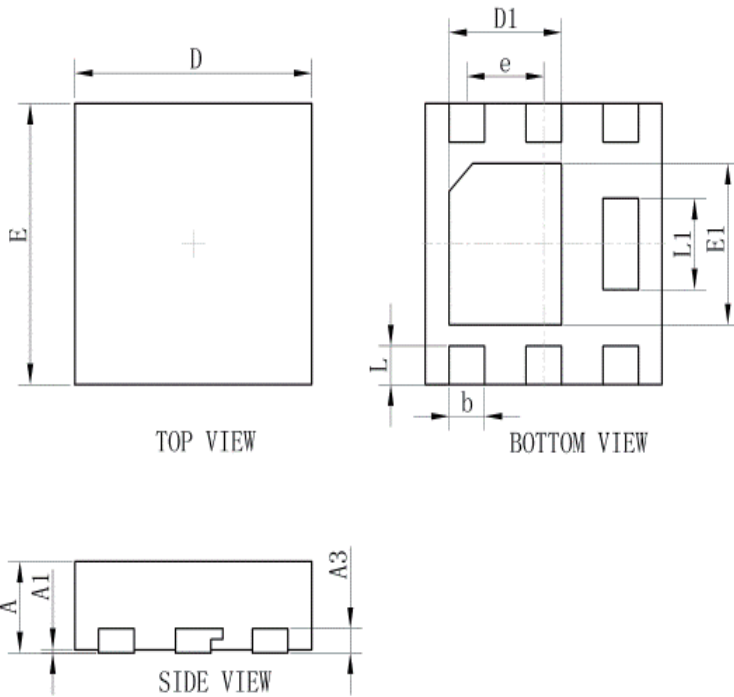
Gate-Source On Resistance



Gate Threshold Voltage

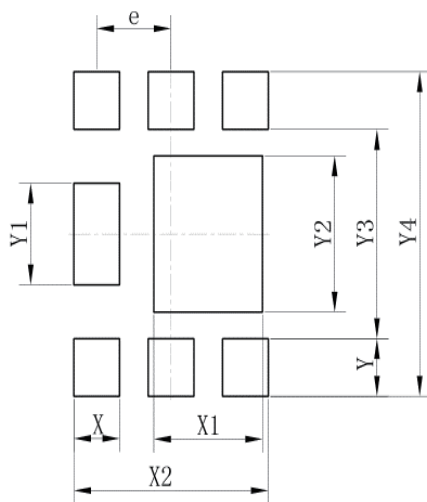


7. OUTLINE AND DIMENSIONS



DFN2020-6S			
DIM	MIN	NOR	MAX
A	0.60	0.65	0.70
A1	0.01	0.03	0.05
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e	0.65TYP.		
L	0.23	0.28	0.33
L1	0.60	0.65	0.65
D1	0.90	0.95	1.00
E1	1.10	1.15	1.20
A3	0.152REF		
All Dimensions in mm			

8. SOLDERING FOOTPRINT



DFN2020-6S	
Dim	(mm)
X	0.40
X1	0.95
X2	1.70
e	0.65
Y	0.43
Y1	0.75
Y2	1.15
Y3	1.54
Y4	2.39