



DESCRIPTION

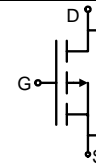
The FTK4459 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It has been optimized for power management applications requiring a wide range of gate drive voltage ratings (4.5V – 25V).

GENERAL FEATURES

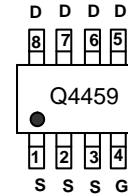
- $V_{DS} = -30V, I_D = -6.5A$
 $R_{DS(ON)} < 72m\Omega @ V_{GS} = -4.5V$
 $R_{DS(ON)} < 46m\Omega @ V_{GS} = -10V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Application

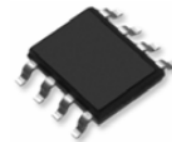
- Battery protection
- Load switch
- Power management



Schematic diagram



Marking and pin Assignment



SOP-8 top view

PACKAGE MARKING AND ORDERING INFORMATION

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
Q4459	FTK4459	SOP-8	Ø330mm	12mm	2500 units

ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-6.5	A
Pulsed Drain Current (note 1)	I_{DM}	-30	A
Power Dissipation (note 2)	P_D	1.25	W
Thermal Resistance from Junction to Ambient (t ≤10s) (note 3)	$R_{\theta JA}$	100	°C/W
Avalanche Current (note 1)	I_{AR}, I_{AS}	17	A
Repetitive energy L=0.1mH (note 1)	E_{AR}, E_{AS}	14	mJ
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~ 150	°C

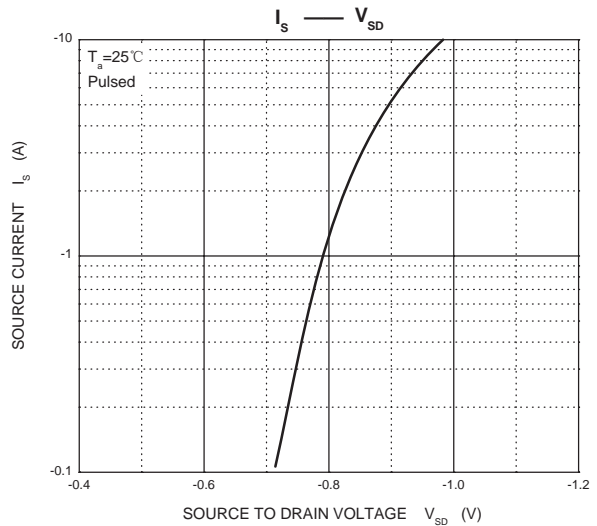
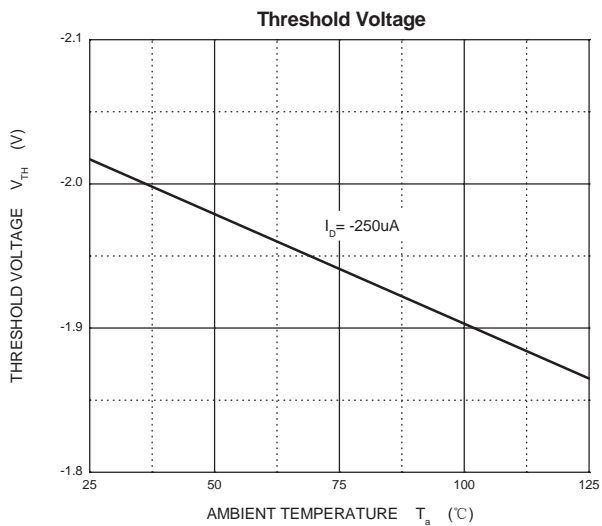
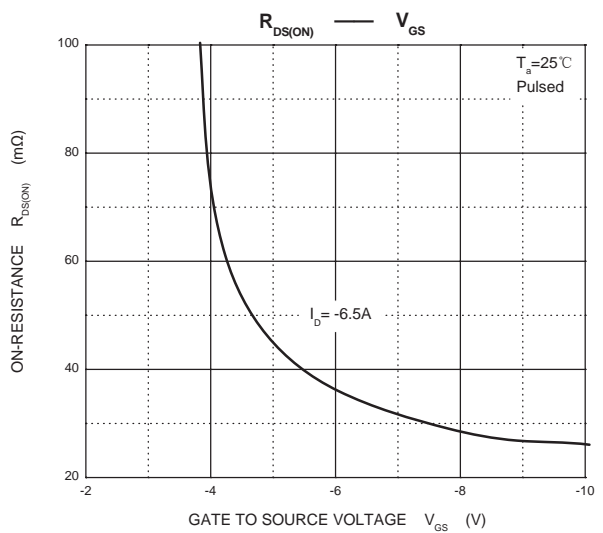
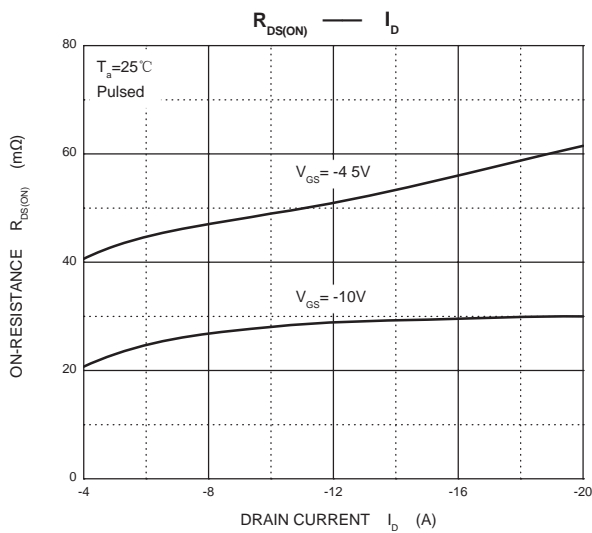
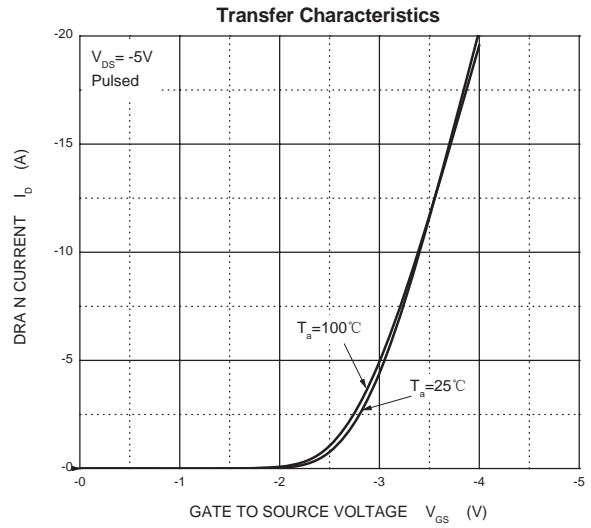
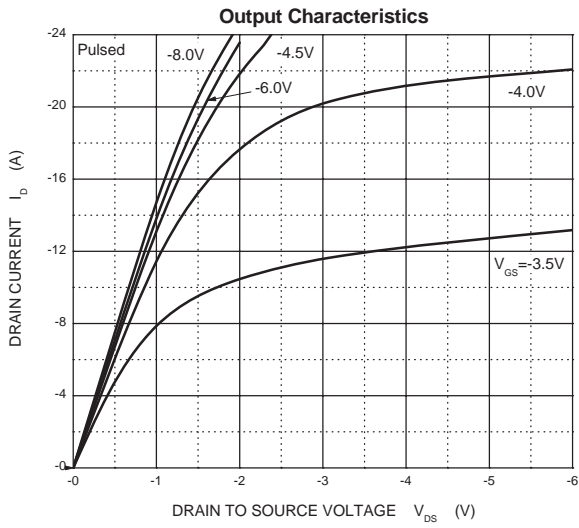
**Electrical characteristics ($T_a=25^\circ\text{C}$ unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage (note 4)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.4		-2.4	V
Drain-source on-resistance (note 4)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -6.5A$			46	$m\Omega$
		$V_{GS} = -4.5V, I_D = -5A$			72	$m\Omega$
Forward transconductance (note 4)	g_{FS}	$V_{DS} = -5V, I_D = -6.5A$	6			S
Diode forward voltage (note 4)	V_{SD}	$I_S = -1A, V_{GS} = 0V$			-1	V
DYNAMIC PARAMETERS (note 5)						
Input Capacitance	C_{ISS}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$	415		625	pF
Output Capacitance	C_{OSS}		70		130	pF
Reverse Transfer Capacitance	C_{RSS}		40		90	pF
SWITCHING PARAMETERS (note 5)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = -10V, V_{DS} = -15V,$ $R_L = 2.5\Omega, R_{GEN} = 3\Omega$		7.5		ns
Turn-on rise time	t_r			5.5		ns
Turn-off delay time	$t_{d(off)}$			19		ns
Turn-off fall time	t_f			7		ns
Total Gate Charge (10V)	Q_g	$V_{DS} = -15V, V_{GS} = -10V, I_D = -6.5A$	7.4		11	nC
Total Gate Charge (4.5V)			3.7		6	nC
Gate-Source Charge	Q_{gs}		1.3		1.9	nC
Gate-Drain Charge	Q_{gd}		1.3		3.1	nC

Notes :

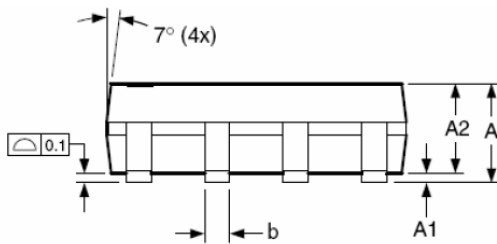
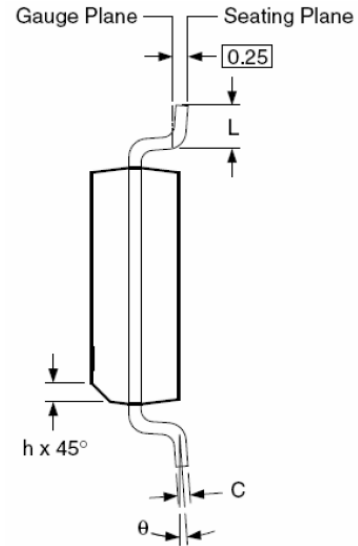
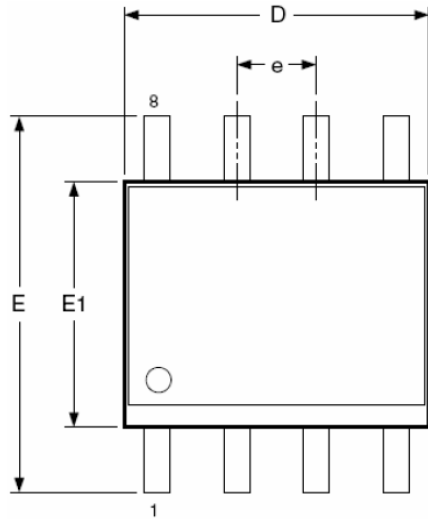
1. Repetitive rating : Pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
2. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using $\leq 10s$ junction-to-ambient thermal resistance.
3. The value in any given application depends on the user's specific board design.
4. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
5. These parameters have no way to verify.

Typical Characteristics

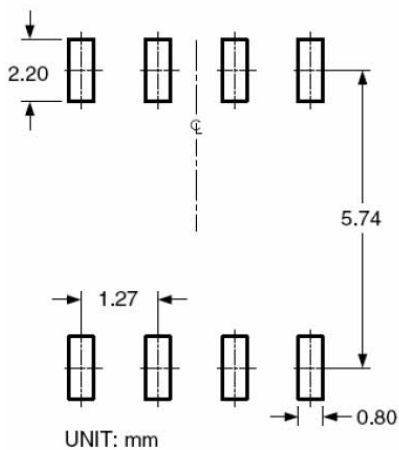


SOP-8 PACKAGE INFORMATION

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.