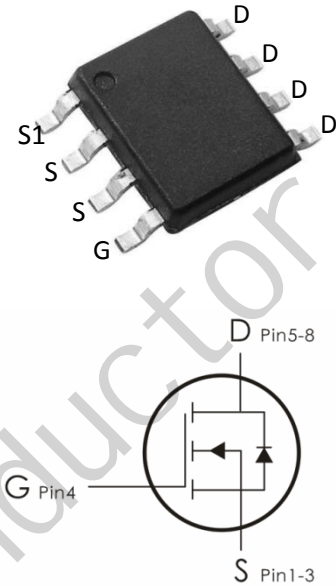


Description:

This N-Channel MOSFET 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.



Features:

- 1) $V_{DS}=100V, I_D=8A, R_{DS(ON)} < 20m\ \Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.

Absolute Maximum Ratings: ($T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C^1$	8	A
	Continuous Drain Current- $T_C=100^\circ C$	---	
	Pulsed Drain Current ²	30	
E_{AS}	Single Pulse Avalanche Energy ⁵	28	mJ
P_D	Power Dissipation ³	3.3	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	---	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to mambient ⁴	38	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
FDS3672	FDS3672	SOP-8

Electrical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
Off Characteristics							
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	---	---	V	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA	
On Characteristics							
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1.4	---	2.5	V	
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=8A$	---	13.8	20	m Ω	
		$V_{GS}=4.5V, I_D=4A$	---	17.4	26		
Dynamic Characteristics							
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	1000	---	pF	
C_{oss}	Output Capacitance		---	180	---		
C_{rss}	Reverse Transfer Capacitance		---	9	---		
Switching Characteristics							
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=50V, I_D=5A, R_G=10\ \Omega$	---	16.6	---	ns	
t_r	Rise Time		---	3.8	---	ns	
$t_{d(off)}$	Turn-Off Delay Time		$V_{GS}=10V$	---	75.5	---	ns
t_f	Fall Time			---	46	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V,$ $I_D=5A$	---	16.2	---	nC	
Q_{gs}	Gate-Source Charge		---	2.8	---	nC	
Q_{gd}	Gate-Drain "Miller" Charge		---	4.1	---	nC	
Drain-Source Diode Characteristics							

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=8A$	---	---	1.3	V
I_S	Continuous Source Current	$V_{GS} < V_{th}$	---	---	8	A
I_{Sp}	Pulsed Source Current		---	---	90	
T_{rr}	Reverse Recovery Time	$I_S=8A,$ $di/dt=100A/\mu s$	---	49	---	NS
Q_{rr}	Reverse Recovery Charge		---	61.8	---	BC
I_{rrm}	Peak reverse recovery current		---	2.4	---	BC

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4) 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 $T_a=25^\circ C$.
- 5) $V_{DD}=50V$, $R_G=25\ \Omega$, $L=0.3\ mH$, starting $T_j=25^\circ C$.

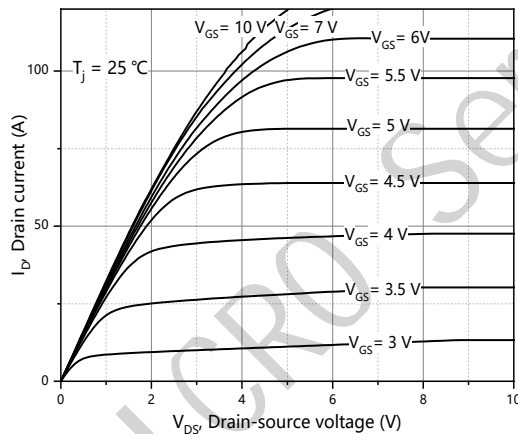
Typical Characteristics: ($T_c=25^\circ C$ unless otherwise noted)


Figure 1, Typ. output characteristics

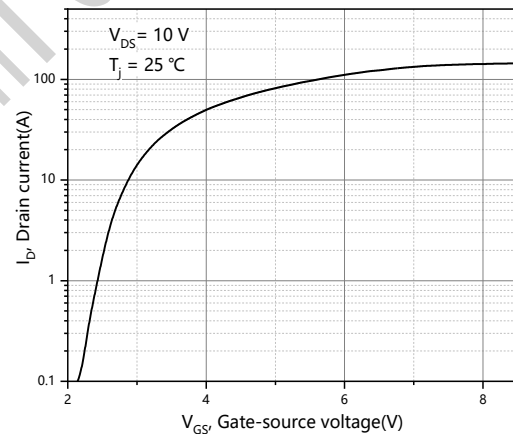


Figure 2, Typ. transfer characteristics

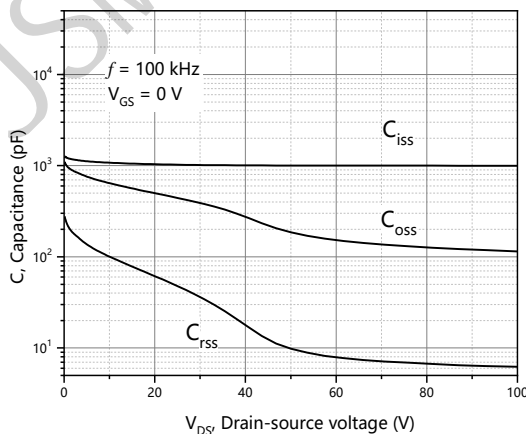


Figure 3, Typ. capacitances

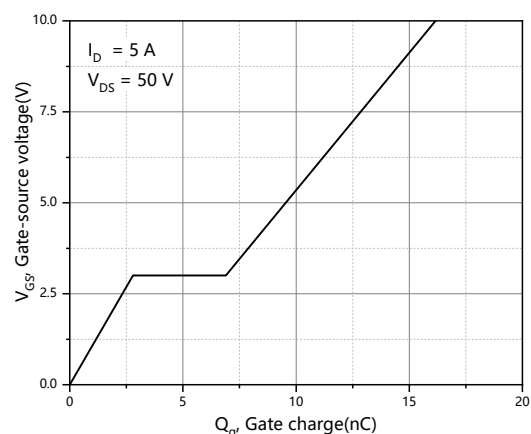


Figure 4, Typ. gate charge

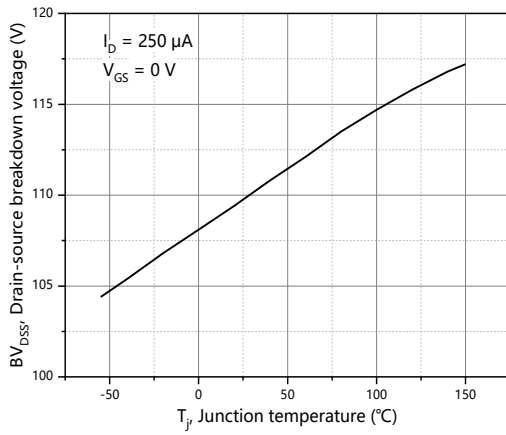


Figure 5, Drain-source breakdown voltage

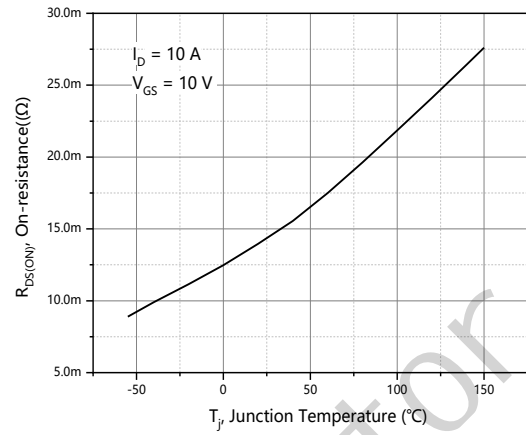


Figure 6, Drain-source on-state resistance

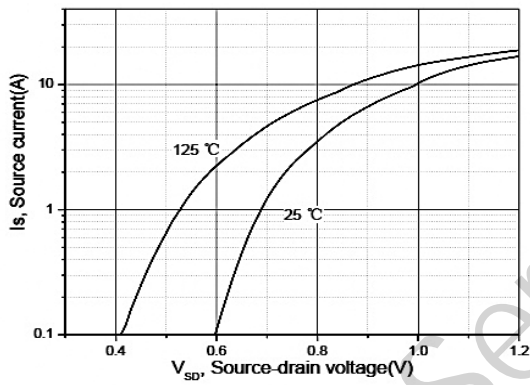


Figure 7, Forward characteristic of body diode

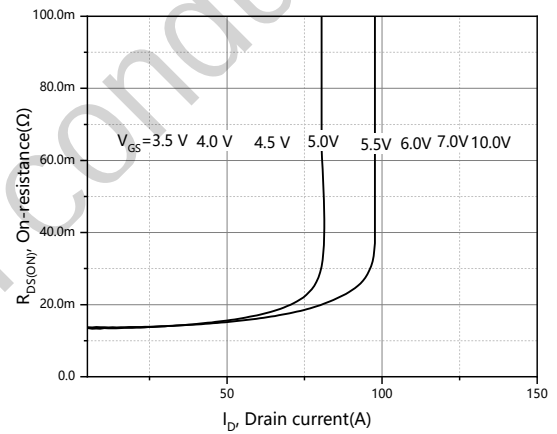


Figure 8, Drain-source on-state resistance

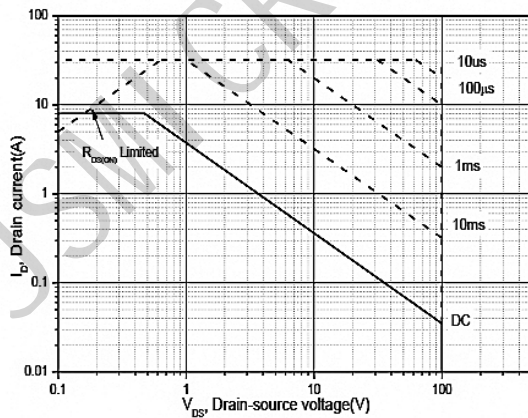
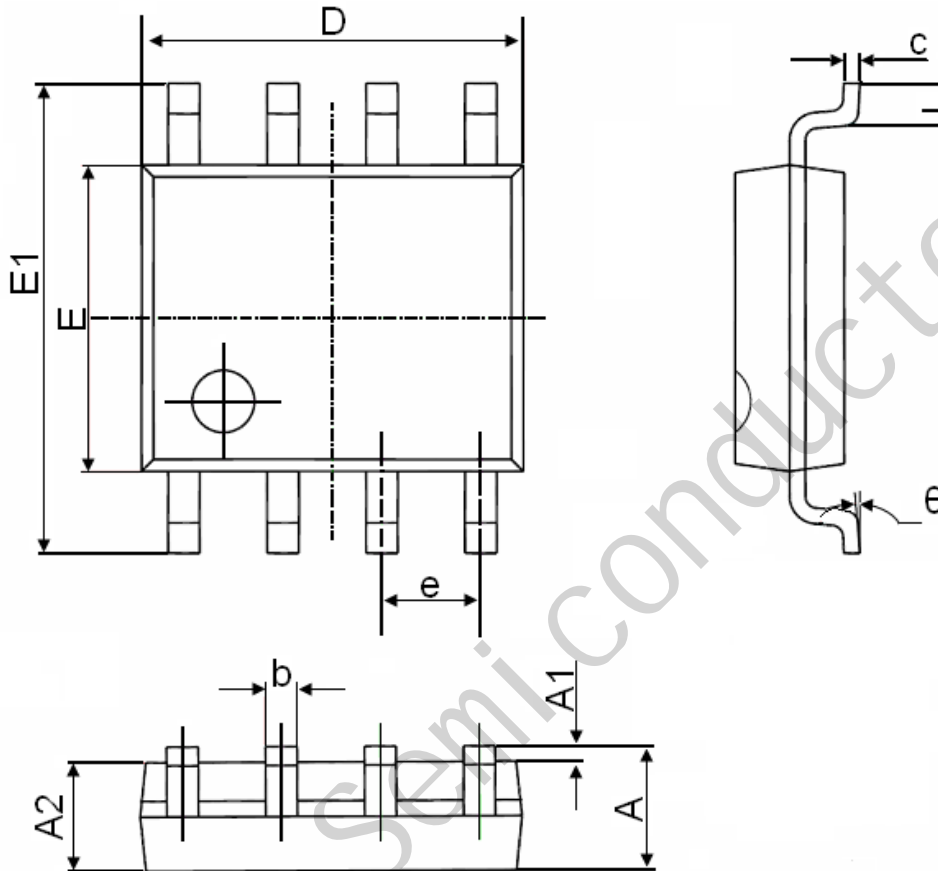


Figure 9 , Safe operation area $T_C=25\text{ }^\circ\text{C}$

SOP-8 Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°