

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	9.5mΩ@10V	15A
	12mΩ@4.5V	

Feature

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery

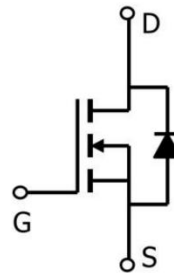
Application

- PD charger
- Motor driver
- Switching voltage regulator
- DC-DC converter
- Switched mode power supply

Package



SOP-8



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ¹⁾ (T _C =25°C)	I_D	15	A
Pulsed Drain Current ²⁾ (T _C =25°C)	$I_{D,pulse}$	60	A
Power Dissipation ³⁾ (T _C =25°C)	P_D	81	W
Single pulsed avalanche energy ⁵⁾	E_{AS}	91	mJ
Thermal Resistance from Junction to Ambient ⁴⁾	$R_{\theta JA}$	62	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

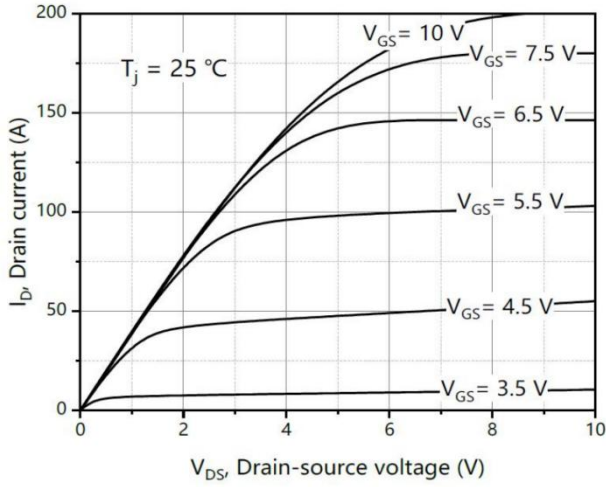
Electrical characteristics (T_A=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V$			±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$		7.5	9.5	mΩ
		$V_{GS} = 4.5V, I_D = 10A$		9	12	
Dynamic characteristics⁶⁾						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 100kHz$		1204		pF
Output Capacitance	C_{oss}			194.1		
Reverse Transfer Capacitance	C_{rss}			9.9		
Total Gate Charge	Q_g	$V_{DS} = 50V, V_{GS} = 10V, I_D = 15A$		17.9		nC
Gate-Source Charge	Q_{gs}			3.8		
Gate-Drain Charge	Q_{gd}			4.2		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 50V, V_{GS} = 10V, I_D = 15A$ $R_G = 2\Omega$		23.9		nS
Turn-on rise time	t_r			4.6		
Turn-off delay time	$t_{d(off)}$			37.8		
Turn-off fall time	t_f			6.4		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 15A$			1.3	V
Reverse recovery time	t_{rr}	$V_R = 50V, I_S = 15A,$ $di/dt = 100A/\mu s$		42.6		ns
Reverse recovery charge	Q_{rr}			36.3		nC
Peak reverse recovery current	I_{rrm}			1.4		A

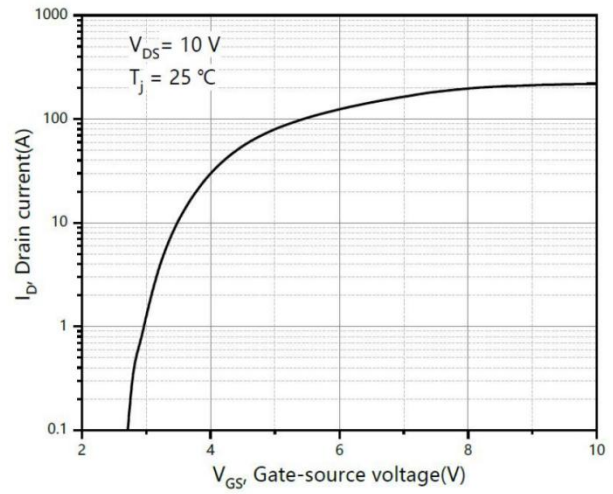
Notes:

- 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 Ta=25°C.
- 5) $V_{DD} = 30V, V_{GS} = 10V, L = 0.3mH$, starting $T_J = 25^\circ C$.
- 6) Guaranteed by design, not subject to production testing.

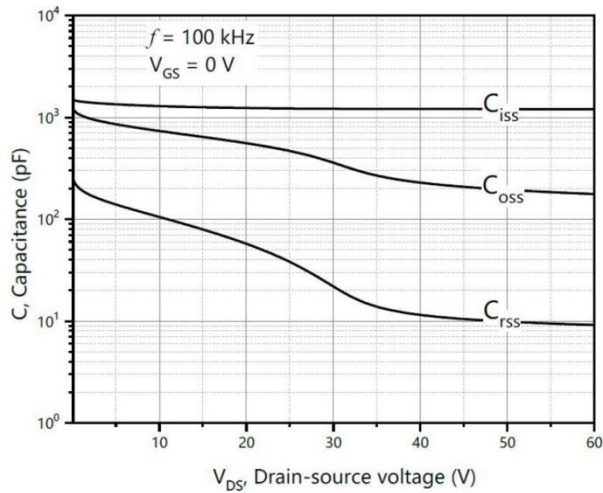
Typical Characteristics



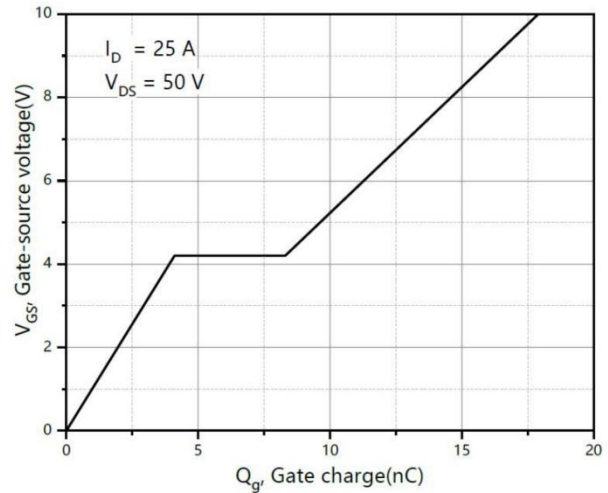
Output characteristics



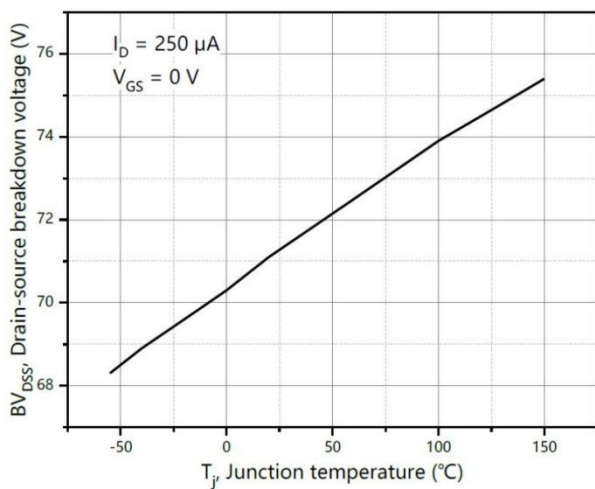
Transfer characteristics



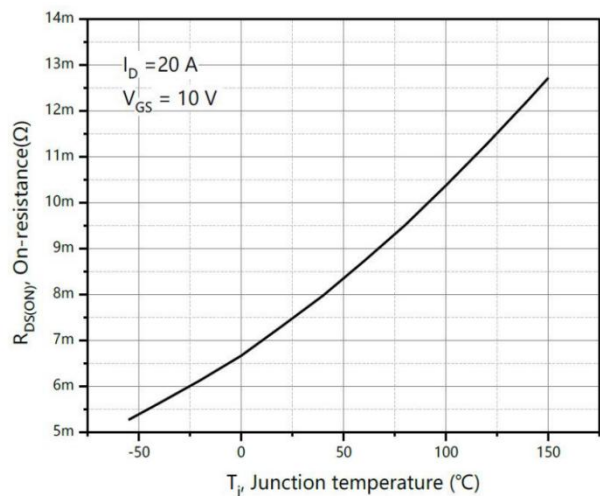
Capacitances



Gate charge

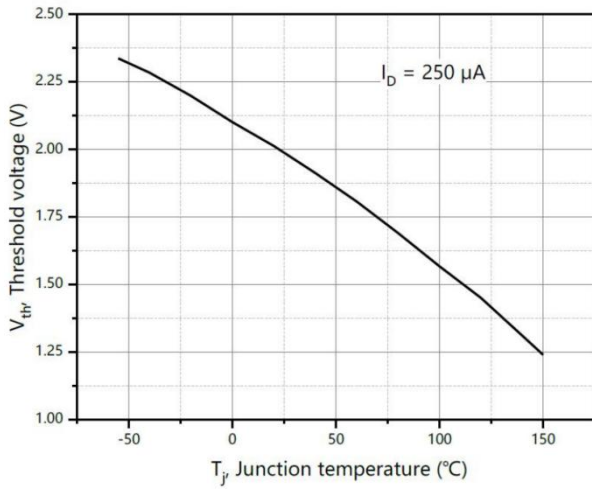


Drain-source breakdown voltage

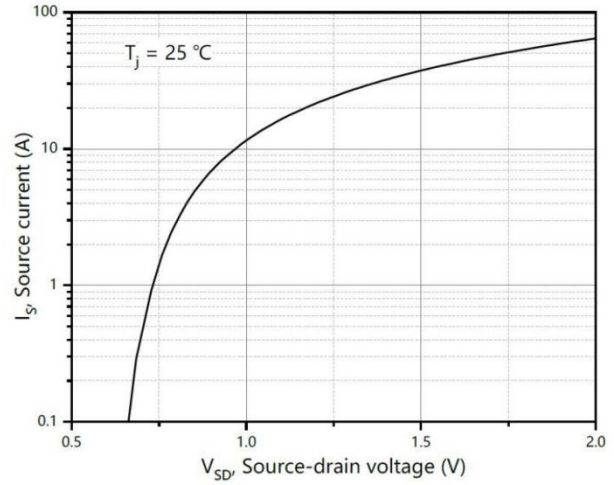


Drain-source on-state resistance

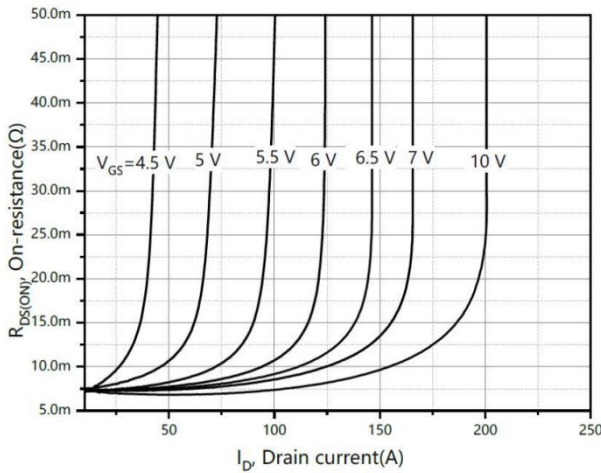
Typical Characteristics



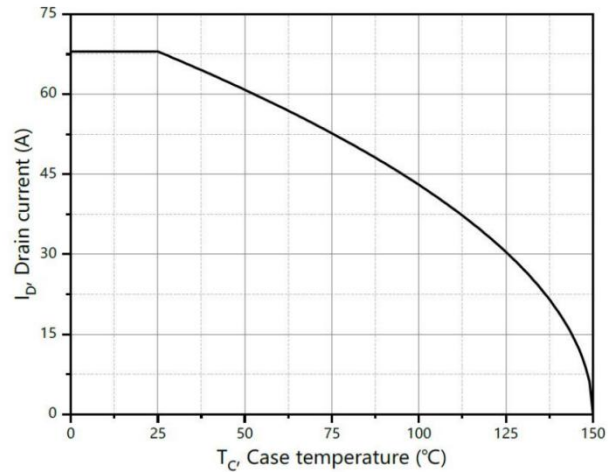
Threshold voltage



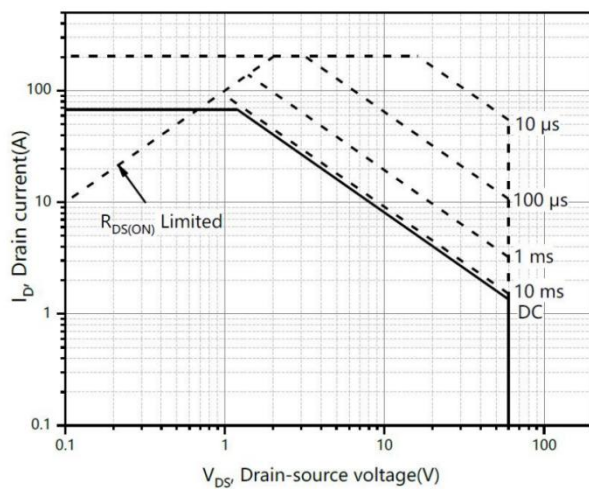
Forward characteristic of body diode



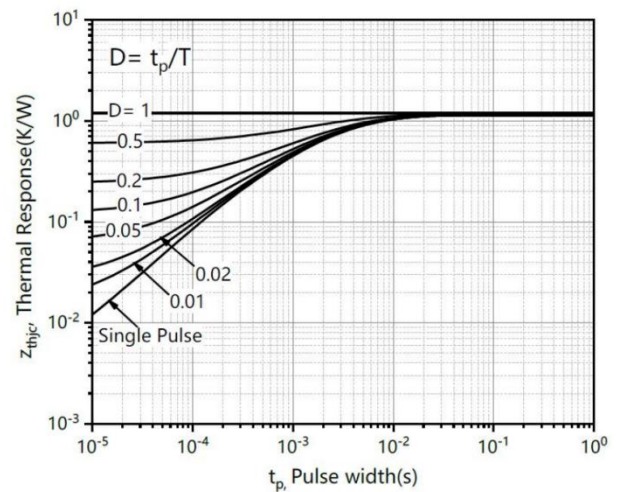
Drain-source on-state resistance



Drain current

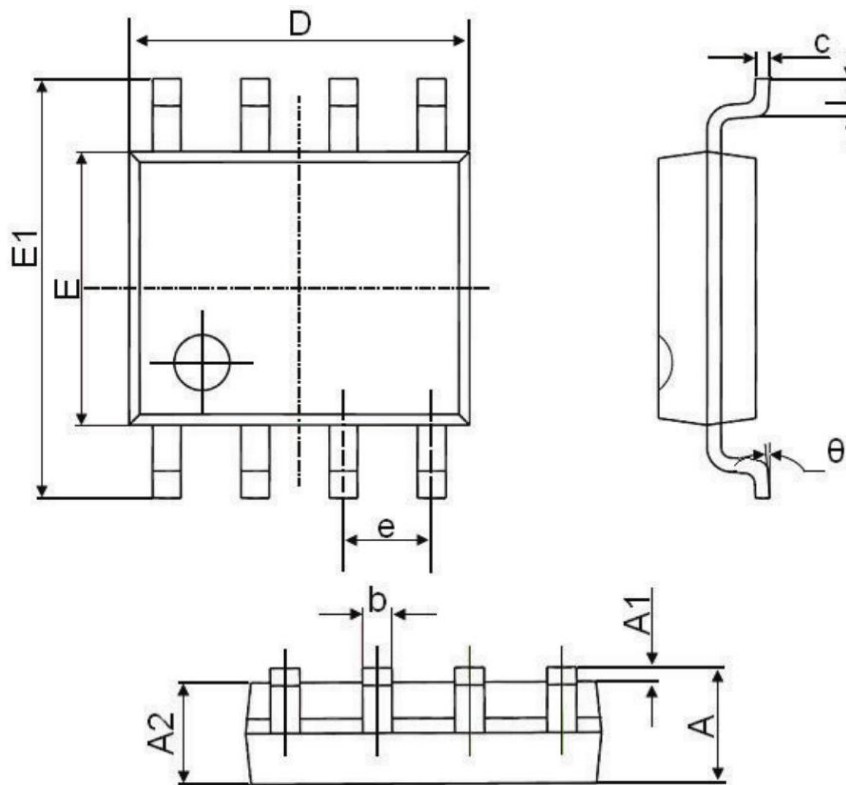


Safe operation area $T_c=25 \text{ }^\circ\text{C}$



Max. transient thermal impedance

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°