

General Description

This MOSFET has been designed to minimize the Drain-source on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

Features

- Low $R_{DS(ON)}$ & FOM
- Low input capacitance
- Extremely low switching loss
- Excellent reliability and uniformity
- Fast switching and soft recovery
- ESD protected up to 2kV



Applications

- Load switch
- PWM application

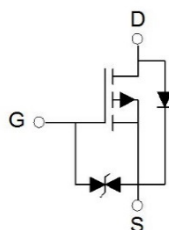
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	-20	V
$R_{DS(ON), max} @ V_{GS} = -4.5V$	41	m Ω

Marking Information

Product Name	Package	Marking
OSH3415	SOT-23	3415

Package & Pin information



Absolute Maximum Ratings at $T_j=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-20	V
Gate-source voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	-4	A
Pulsed Drain Current ¹⁾	$I_{D,pulse}$	-30	A
Power Dissipation	P_D	1.4	W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance, junction-ambient ²⁾	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$

Electrical Characteristics at $T_j=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-source breakdown voltage	BV_{DSS}	-20			V	$V_{GS}=0\text{ V}, I_D=-250\text{ }\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	-0.35	-0.55	-0.9	V	$V_{DS}=V_{GS}, I_D=-250\text{ }\mu\text{A}$
Drain-source on-state resistance	$R_{DS(on)}$		33	41	$\text{m}\Omega$	$V_{GS}=-4.5\text{ V}, I_D=-4\text{ A}$
			42	60	$\text{m}\Omega$	$V_{GS}=-2.5\text{ V}, I_D=-4\text{ A}$
Gate-source leakage current	I_{GSS}			10	μA	$V_{GS}=10\text{ V}$
				-10		$V_{GS}=-10\text{ V}$
Drain-source leakage current	I_{DSS}			1	μA	$V_{DS}=-20\text{ V}, V_{GS}=0\text{ V}$

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		1181		pF	$V_{GS}=0\text{ V},$ $V_{DS}=-10\text{ V},$ $f=1.0\text{ MHz}$
Output capacitance	C_{oss}		121		pF	
Reverse transfer capacitance	C_{rss}		114		pF	
Turn-on Delay Time	$t_{d(on)}$		12		ns	$V_{DD}=-10\text{ V},$ $R_L=2.5\text{ }\Omega,$ $V_{GS}=-4.5\text{ V},$ $R_{GEN}=3\text{ }\Omega$
Turn-on Rise Time	t_r		10		ns	
Turn-Off Delay Time	$t_{d(off)}$		19		ns	
Turn-Off Fall Time	t_f		25		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total Gate Charge	Q_g		10.2		nC	$V_{GS} = -4.5\text{ V}$, $V_{DS} = -10\text{ V}$, $I_D = -4\text{ A}$
Gate-Source Charge	Q_{gs}		1.3		nC	
Gate-Drain Charge	Q_{gd}		2.4		nC	

Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Source drain current (Body Diode)	I_{SD}			-4	A	$T_A = 25^\circ\text{C}$
Diode forward voltage ²⁾	V_{SD}			-1.2	V	$I_S = -4\text{ A}$, $V_{GS} = 0\text{ V}$

Note: 1) Pulse width limited by maximum allowable junction temperature.

2) Repetitive Rating: Pulse width limited by maximum junction temperature.

Electrical Characteristics Diagrams

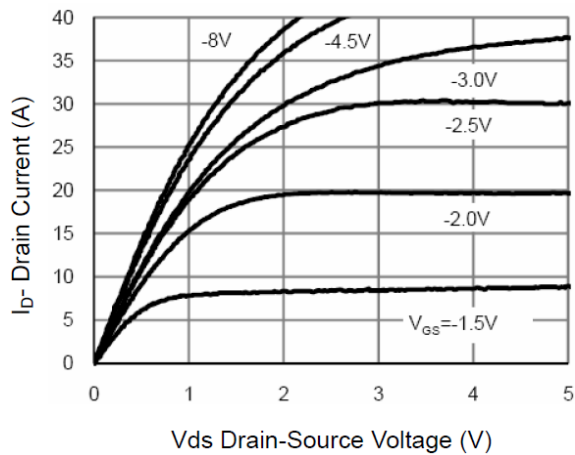


Figure 1. Typ. output characteristics

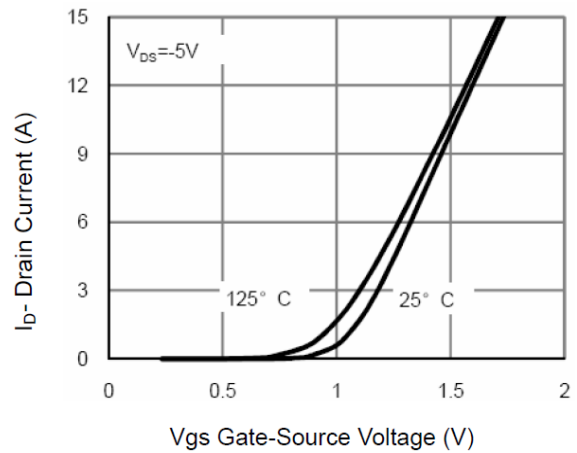


Figure 2. Typ. transfer characteristics

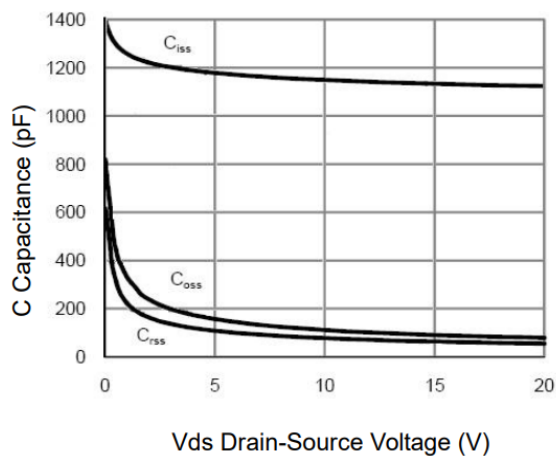


Figure 3. Capacitance

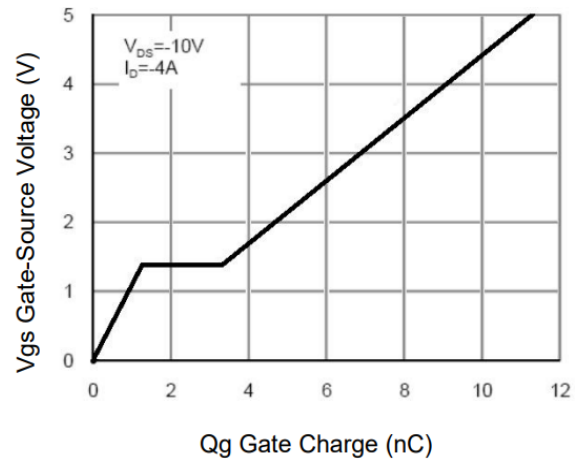


Figure 4. Gate charge

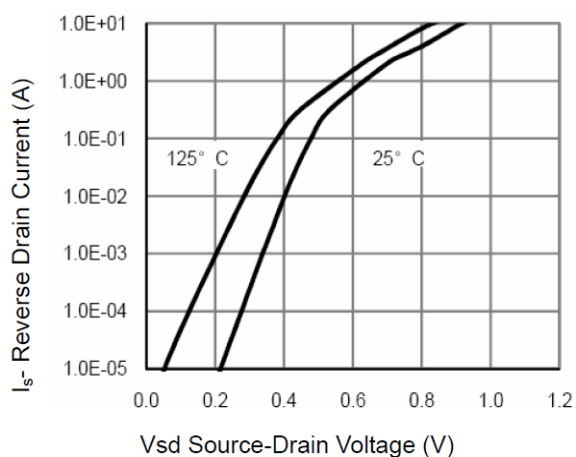


Figure 5. Body-diode characteristics

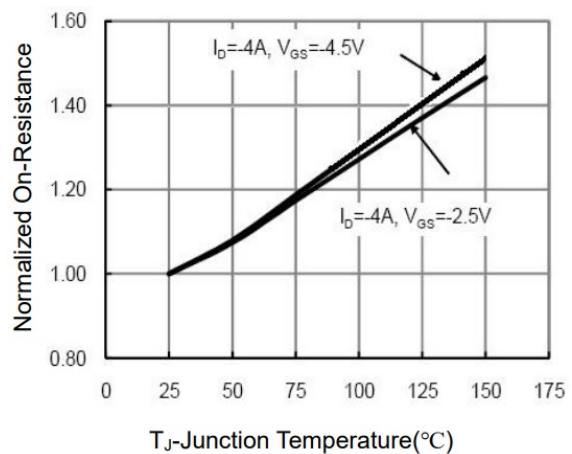
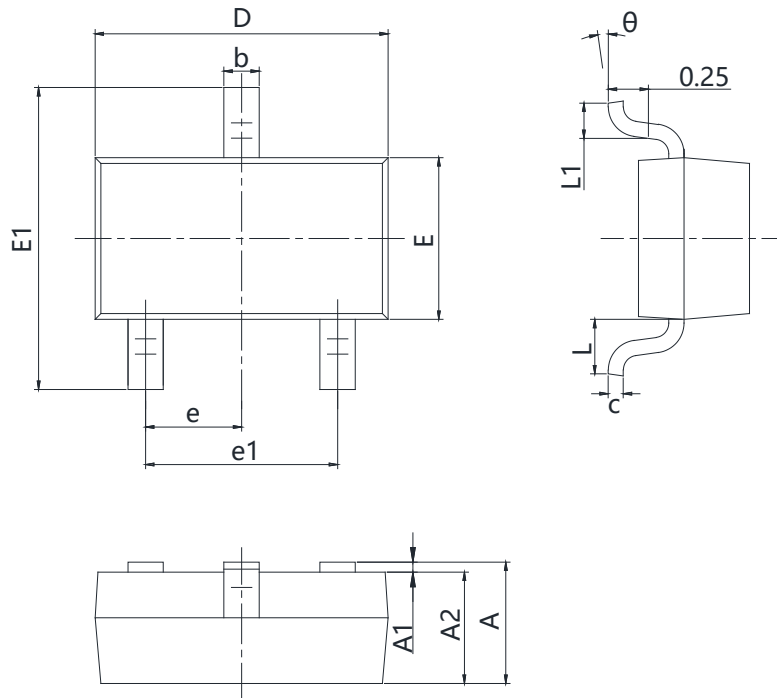


Figure 6. $R_{DS(ON)}$ vs junction temperature

Package Information



Symbol	mm	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	0.280	3.000
E	1.200	1.400
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
L2	-	1.750
θ	0°	8°

Version : SOT23-V package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
SOT23-V	3000	15	45000	4	180000

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