

General Description

This MOSFET uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.

Features

- High dense design
- Excellent gate charge x $R_{DS(ON)}$ product (FOM)
- Ultra low on resistance
- Reliable and rugged

Applications

- DC/DC converter
- Synchronous rectification



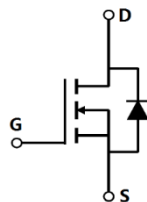
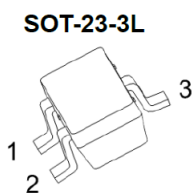
Key Performance Parameters

Parameter	Value	Unit
V_{DS}	60	V
$R_{DS(ON), max} @ V_{GS}=10V$	28	m Ω

Marking Information

Product Name	Package	Marking
OSHL6005	SOT-23-3L	6005

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}	60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	5.8	A
Pulsed Drain Current ¹⁾	$I_{D,pulse}$	23.2	A
Power Dissipation	P_D	2	W
Operation and storage temperature	T_{stg}, T_j	-55 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$

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}	60			V	$V_{GS}=0\text{ V}, I_D=250\text{ }\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	1.1	1.7	2.3	V	$V_{DS}=V_{GS}, I_D=250\text{ }\mu\text{A}$
Drain-source on-state resistance	$R_{DS(ON)}$		21.5	28	$\text{m}\Omega$	$V_{GS}=10\text{ V}, I_D=5\text{ A}$
Drain-source on-state resistance	$R_{DS(ON)}$		26.7	34.7	$\text{m}\Omega$	$V_{GS}=4.5\text{ V}, I_D=4\text{ A}$
Gate-source leakage current	I_{GSS}			100	nA	$V_{GS}=20\text{ V}, V_{DS}=0\text{ V}$
				-100		$V_{GS}=-20\text{ V}, V_{DS}=0\text{ V}$
Drain-source leakage current	I_{DSS}			1	μA	$V_{DS}=60\text{ V}, V_{GS}=0\text{ V}$

Dynamic Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Input capacitance	C_{iss}		979		pF	$V_{GS}=0\text{ V}$, $V_{DS}=30\text{ V}$, $f=1.0\text{ MHz}$
Output capacitance	C_{oss}		120		pF	
Reverse transfer capacitance	C_{rss}		100		pF	
Turn-on Delay Time	$t_{d(on)}$		10		ns	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $R_L=6.7\ \Omega$, $R_G=3\ \Omega$
Turn-on Rise Time	t_r		3		ns	
Turn-Off Delay Time	$t_{d(off)}$		21		ns	
Turn-Off Fall Time	t_f		5		ns	

Gate Charge Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Total Gate Charge	Q_g		29		nC	$V_{GS}=10\text{ V}$, $V_{DS}=30\text{ V}$, $I_D=5\text{ A}$
Gate-Source Charge	Q_{gs}		3.3		nC	
Gate-Drain Charge	Q_{gd}		5.2		nC	

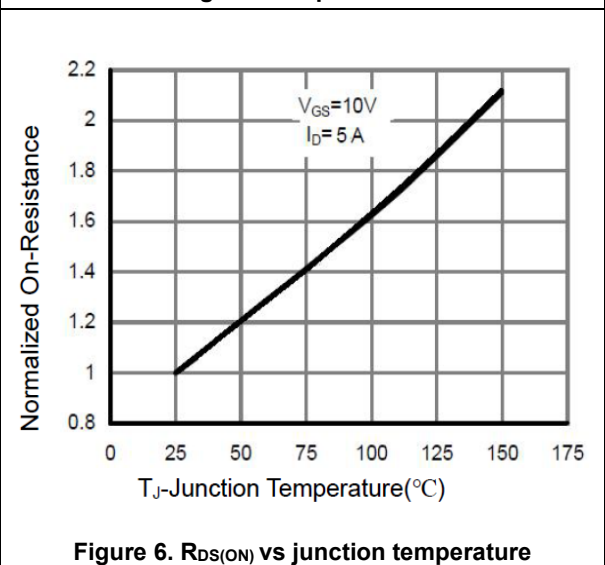
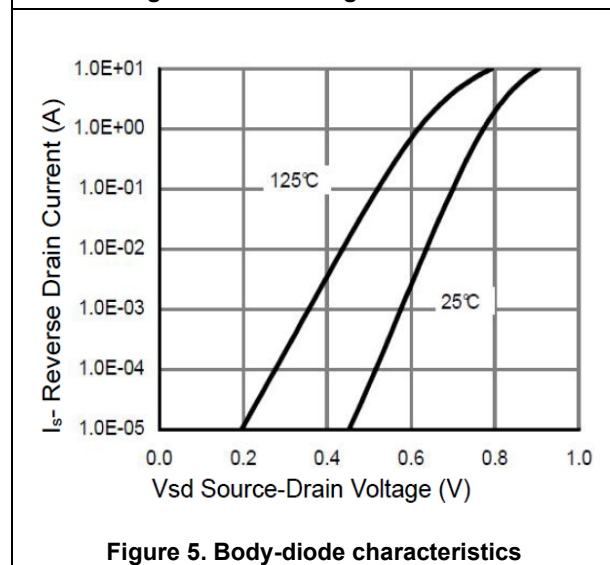
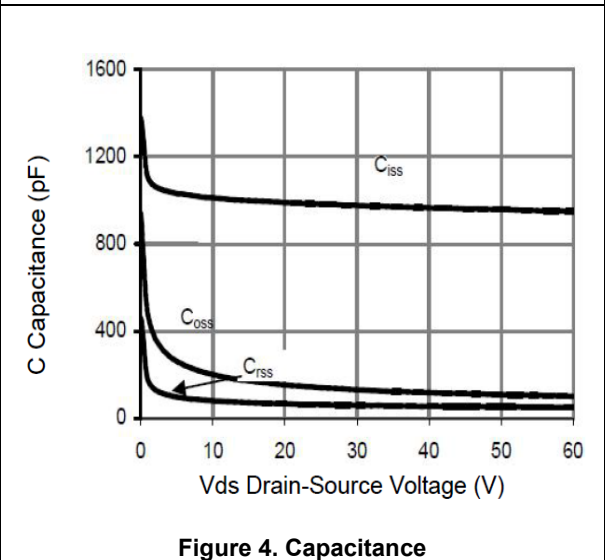
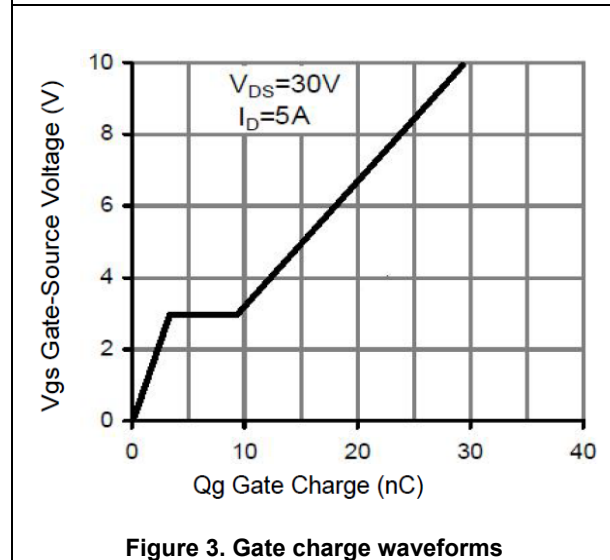
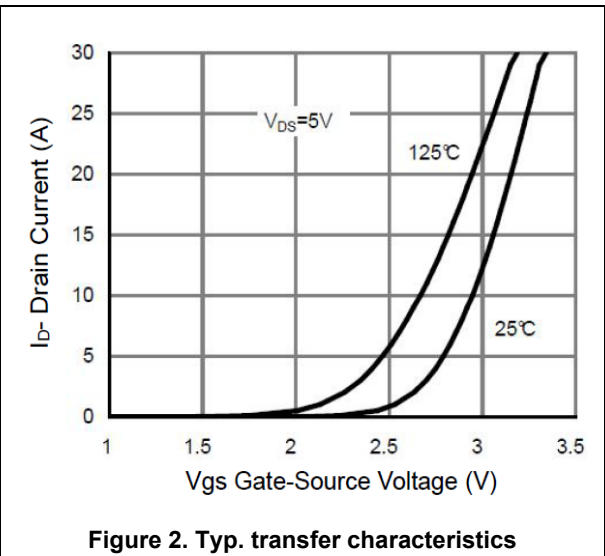
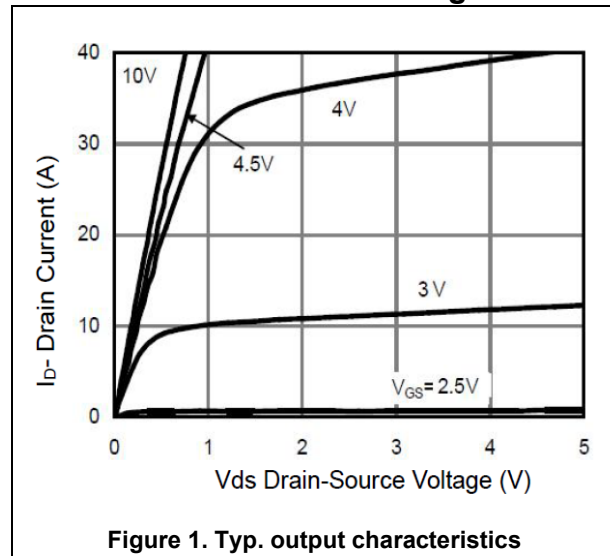
Body Diode Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Source drain current (Body Diode)	I_{SD}			5.8	A	$T_A=25^\circ\text{C}$
Diode forward voltage ²⁾	V_{SD}			1.2	V	$I_S=5\text{ A}$, $V_{GS}=0\text{ V}$

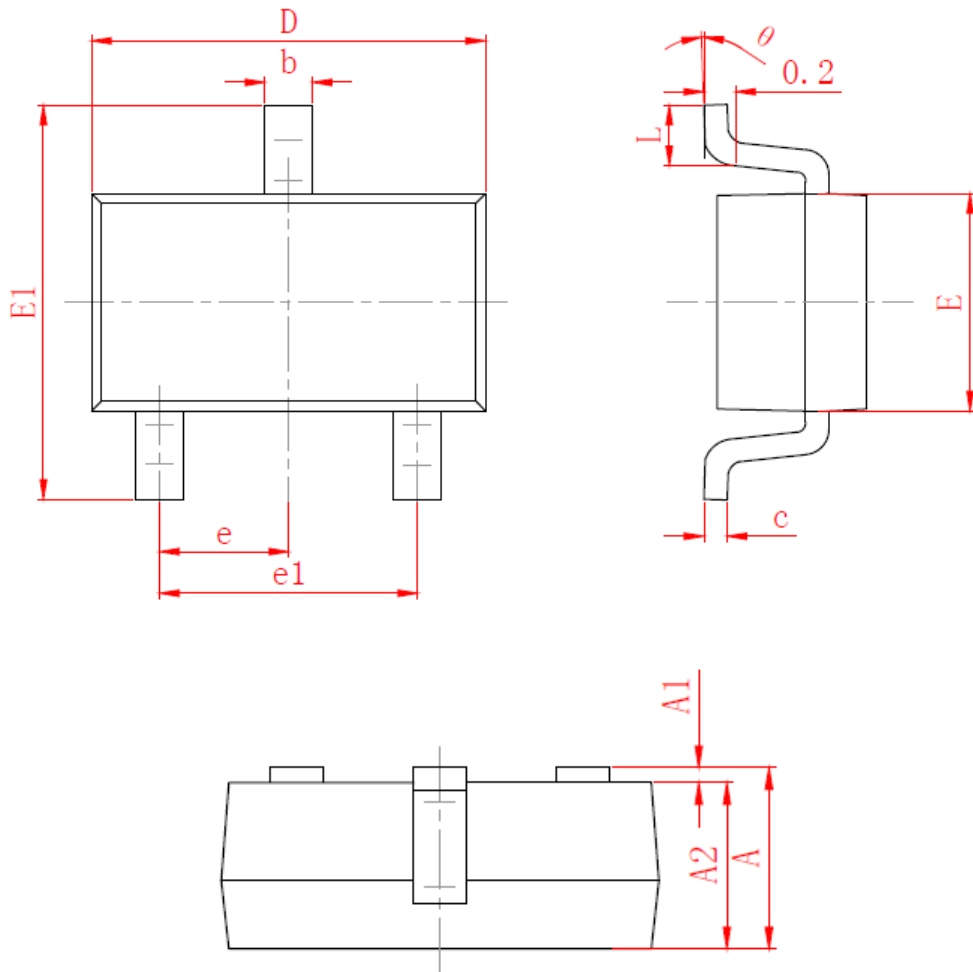
Note: 1) Pulse width limited by maximum allowable junction temperature.

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

Electrical Characteristics Diagrams



Package Information



Symbol	mm	
	Min	Max
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.250	0.450
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 BSC	
e1	1.800	2.000
L	0.300	0.500
θ	0°	8°

Version1 : SOT-23-3L-V package outline dimension

Ordering Information

Package Type	Units/ Reel	Reels/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
SOT-23-3L-V	3000	15	45000	4	180000

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