

Features

- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Bvdss

60V

Rdson

12mΩ

ID

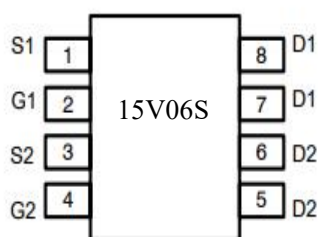
15A

Application

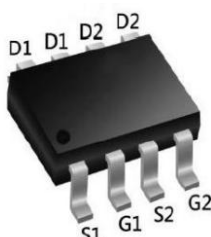
- Power management functions
- Synchronous-rectification applications
- DC-DC Converter

RoHS

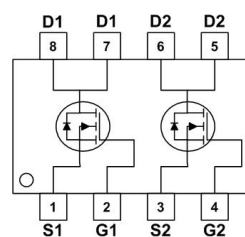
Package



Marking and pin assignment



SOP-8 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
15V06S	S15V06S	SOP-8	3000

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	$I_D @ T_C = 25^\circ C$	15	A
	$I_D @ T_C = 100^\circ C$	9	A
Pulsed Drain Current ¹	I_{DM}	180	A
Single Pulsed Avalanche Energy ²	E_{AS}	36	mJ
Avalanche Current	I_{AS}	--	A
Total Power Dissipation	$P_D @ T_C = 25^\circ C$	60	W
Operating Junction Temperature Range	T_J	$-55 \sim +175$	$^\circ C$
Storage Temperature Range	T_{STG}	$-55 \sim +175$	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	--	--	$^\circ C/W$



$R_{\theta JC}$	Thermal Resistance Junction-Case	--	2.5	$^{\circ}\text{C/W}$
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Ordering Information

Ordering Number	Package	Pin Assignment						Packing
Halogen Free		G1	G2	D1	D2	S1	S2	
HLS15V06S	SOP-8	2	4	7,8	5,6	1	3	Tape Reel

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
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 to Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.6	2.5	V
Static Drain-Source On-Resistance ³	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	12	15	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	15	20	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	930	-	pF
Output Capacitance	C_{oss}		-	230	-	
Reverse Transfer Capacitance	C_{rss}		-	8	-	
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=10V, I_D=20A$	-	22	-	nC
Gate-Source Charge	Q_{gs}		-	4.5	-	
Gate-Drain("Miller")Charge	Q_{gd}		-	3.5	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=20A, V_{GS}=10V, R_G=1.6\Omega$	-	4.5	-	ns
Turn-on Rise Time	t_r		-	2.7	-	
Turn-off Delay Time	$t_{d(off)}$		-	13.8	-	
Turn-off Fall Time	t_f		-	2.7	-	
Maximum Continuous Drain to Source Diode Forward Current	I_S	--	-	-	15	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	--	-	-	180	A
Drain to Source Diode Forward Voltage	V_{SD}	$I_S=30A, V_{GS}=0V$	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=20A, dI/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	-	18	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	12	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition : $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_{GS}=10V, L=0.5mH, R_G=25\Omega, I_{AS}=12A$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure1: Output Characteristics

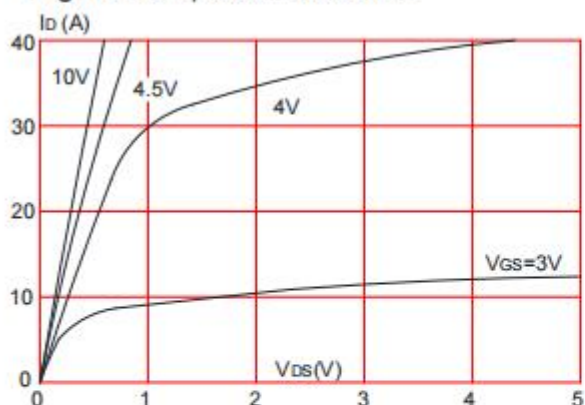


Figure 2: Typical Transfer Characteristics

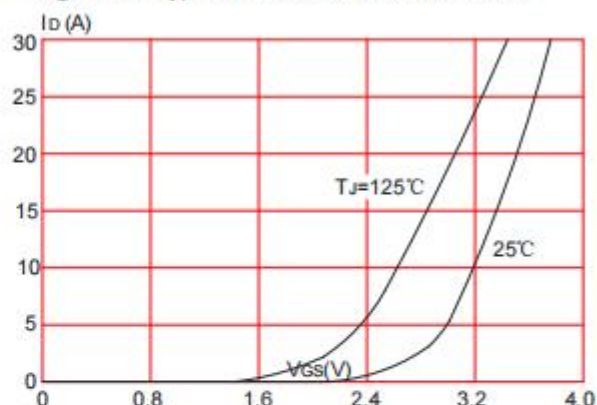


Figure 3: On-resistance vs. Drain Current

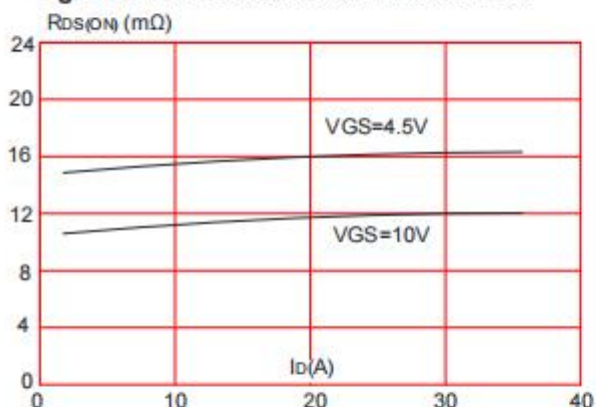


Figure 4: Body Diode Characteristics

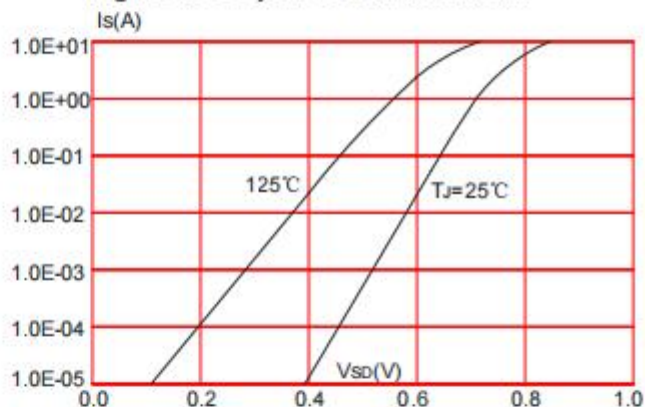


Figure 5: Gate Charge Characteristics

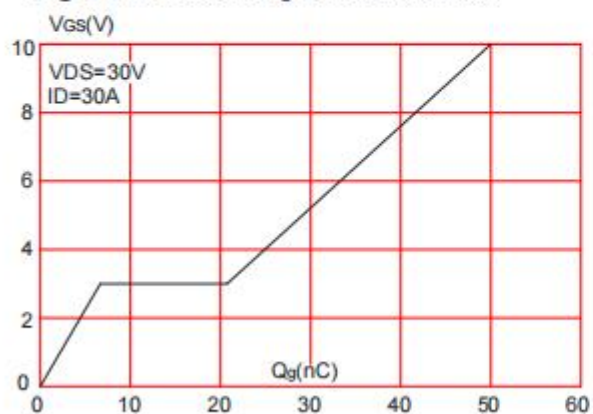


Figure 6: Capacitance Characteristics

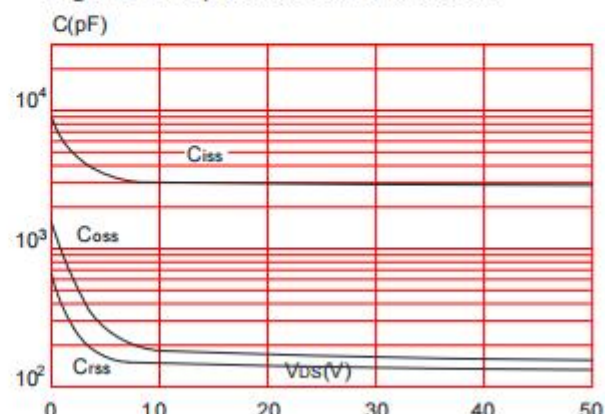


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

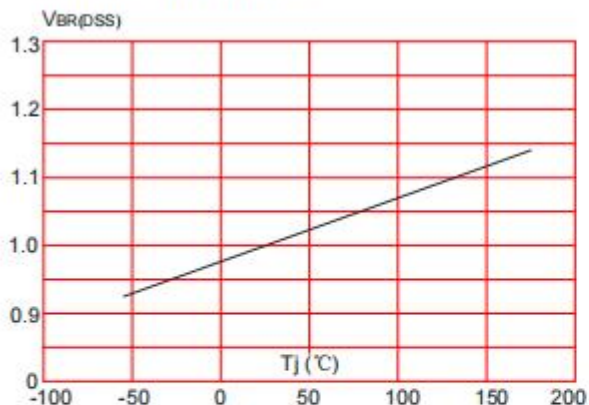


Figure 8: Normalized on Resistance vs. Junction Temperature

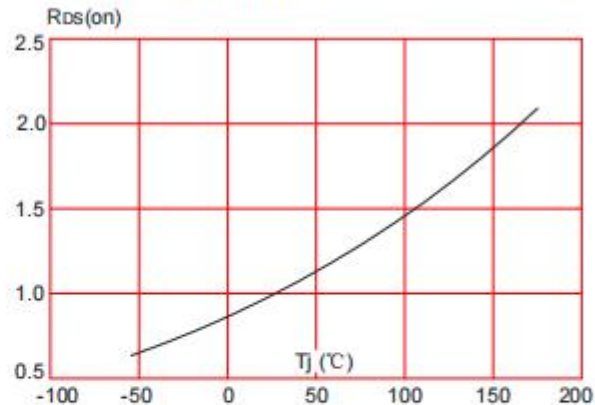


Figure 9: Maximum Safe Operating Area

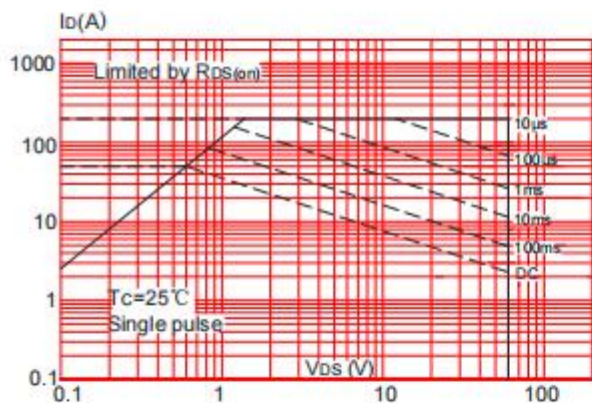


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

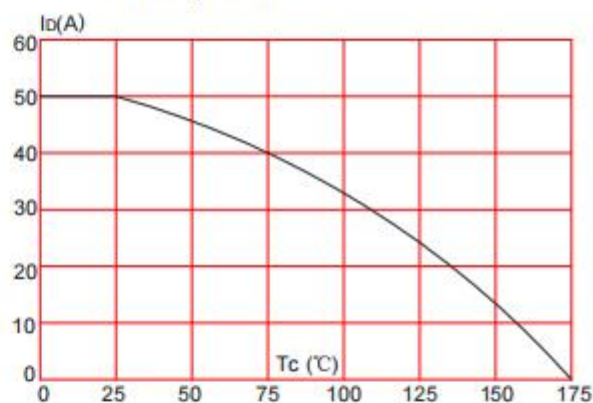
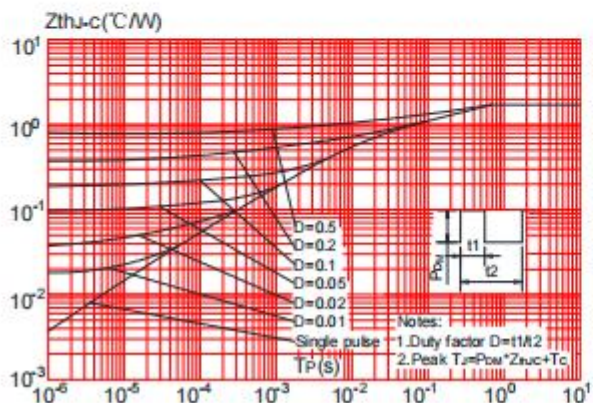
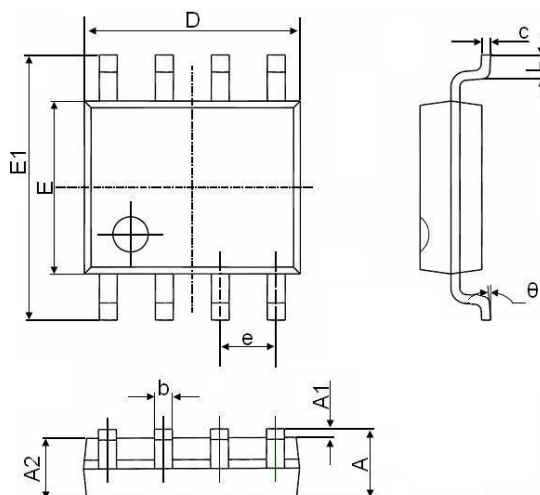


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Mechanical Data SOP-8



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°



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