

Dual N-Ch 60V Fast Switching MOSFETs

Product Summary



- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

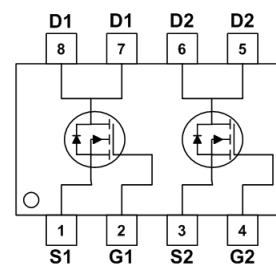
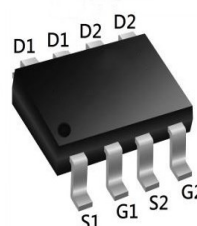
BVDSS	RDS(on)	ID
60V	25mΩ	8.0A

Description

The UD8V06S is the high cell density trenched N-ch MOSFETs, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

The UD8V06S meet the RoHS and Green Product

SOP8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _A =25°C	Continuous Drain Current, V _{GS} @ 10V ¹	8.0	A
I _D @T _A =70°C	Continuous Drain Current, V _{GS} @ 10V ¹	5.5	A
I _{DM}	Pulsed Drain Current ²	25	A
EAS	Single Pulse Avalanche Energy ³	28	mJ
I _{AS}	Avalanche Current	10	A
P _D @T _A =25°C	Total Power Dissipation ⁴	1.5	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	80	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	---	25	°C/W

Dual N-Ch 60V Fast Switching MOSFETs
Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60	-	-	V
Gate-Body Leakage Current		I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T _J =25°C	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V	-	-	1	μA
	T _J =100°C			-	-	100	
Gate-Threshold Voltage		V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2	1.7	2.5	V
Drain-Source on-Resistance ⁴		R _{DS(on)}	V _{GS} = 10V, I _D = 10A	-	25	32	mΩ
			V _{GS} = 4.5V, I _D = 5A	-	31	40	
Forward Transconductance ⁴		g _{fs}	V _{DS} = 5V, I _D = 10A	-	15.5	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C _{iss}	V _{DS} = 30V, V _{GS} =0V, f =1MHz	-	1355	-	pF
Output Capacitance		C _{oss}		-	60	-	
Reverse Transfer Capacitance		C _{rss}		-	49	-	
Gate Resistance		R _G	f =1MHz	-	1.2	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q _g	V _{GS} = 10V, V _{DD} = 30V, I _D = 10A	-	22	-	nC
Gate-Source Charge		Q _{gs}		-	4.2	-	
Gate-Drain Charge		Q _{gd}		-	6.9	-	
Turn-on Delay Time		t _{d(on)}	V _{GS} =10V, V _{DD} = 30V, R _G = 3Ω, I _D = 10A	-	6.4	-	ns
Rise Time		t _r		-	15.3	-	
Turn-off Delay Time		t _{d(off)}		-	25	-	
Fall Time		t _f		-	7.6	-	
Body Diode Reverse Recovery Time		t _{rr}	I _F =10A, dI _F /dt=100A/μs	-	26	-	ns
Body Diode Reverse Recovery Charge		Q _{rr}		-	45	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V _{SD}	I _S = 10A, V _{GS} = 0V	-	-	1.2	V
Continuous Source Current	T _C =25°C	I _S	-	-	-	8	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$
2. The EAS data shows Max. rating . The test condition is $V_{DD} = 25V, V_{GS} = 10V, L = 0.4mH, I_{AS} = 14A$
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Performance Characteristics

Figure 1: Output Characteristics

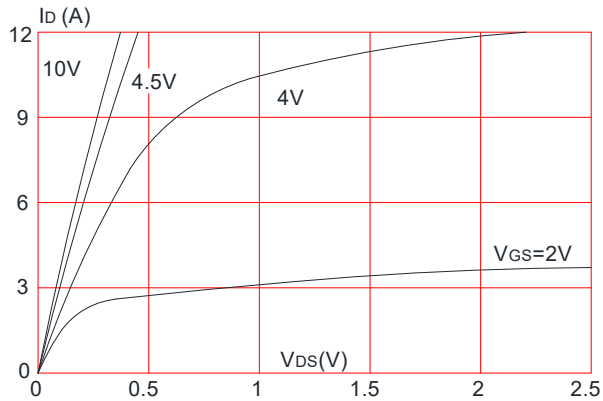


Figure 2: Typical Transfer Characteristics

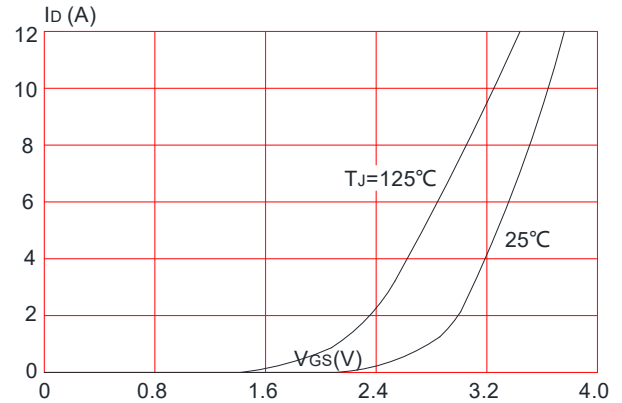


Figure 3: On-resistance vs. Drain Current

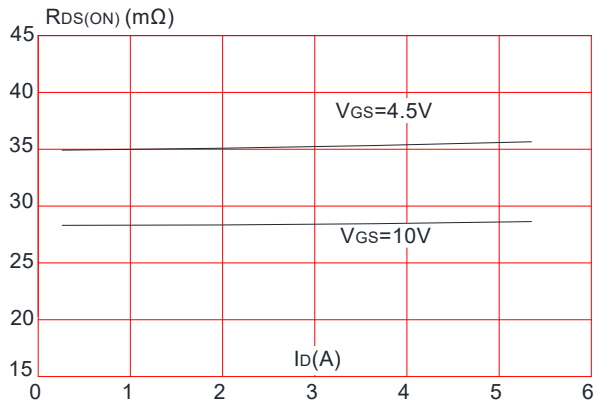


Figure 4: Body Diode Characteristics

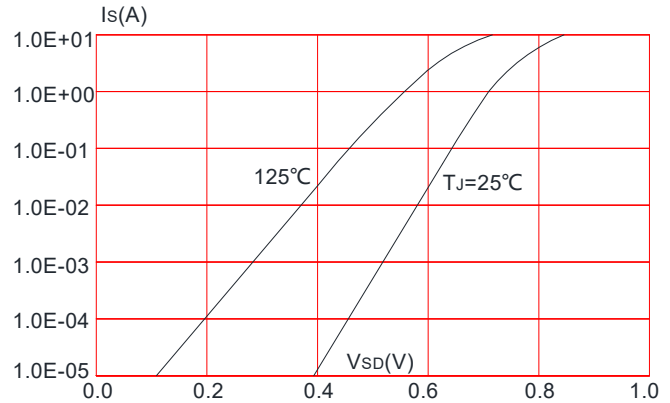


Figure 5: Gate Charge Characteristics

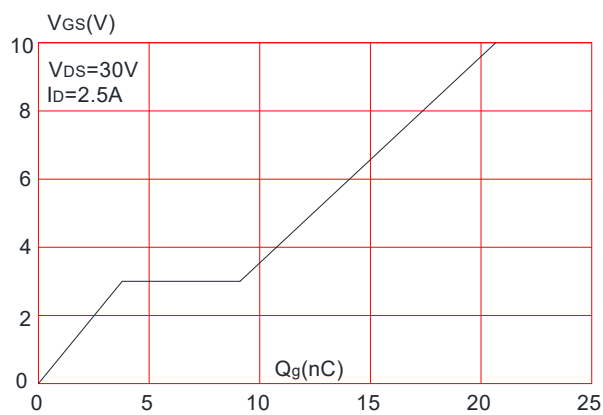
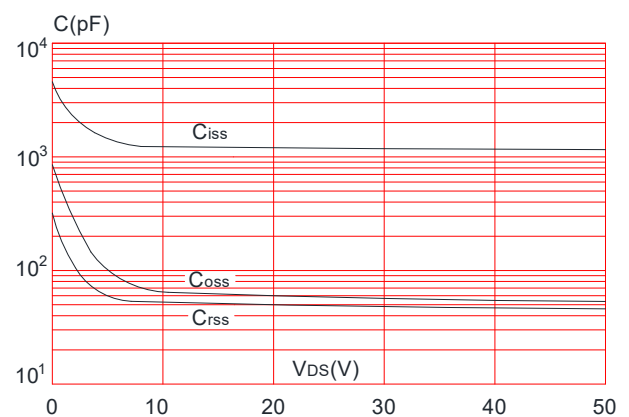


Figure 6: Capacitance Characteristics



Dual N-Ch 60V Fast Switching MOSFETs

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

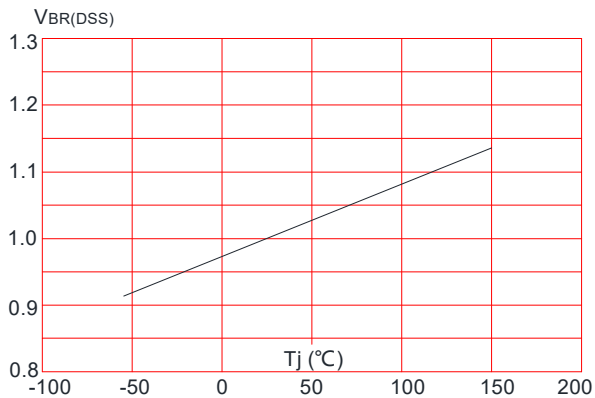


Figure 8: Normalized on Resistance vs. Junction Temperature

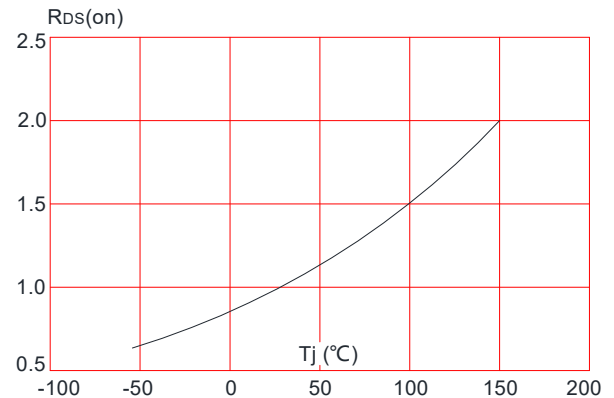


Figure 9: Maximum Safe Operating Area

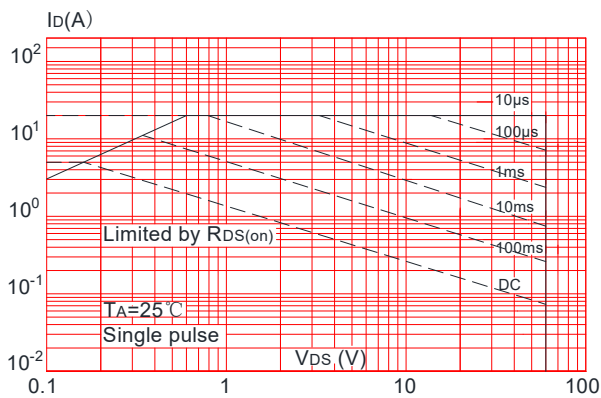


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

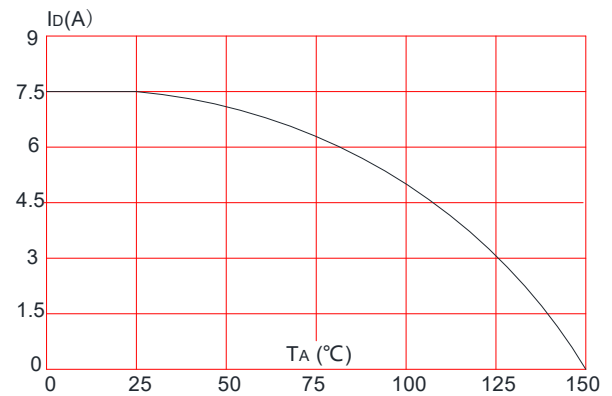
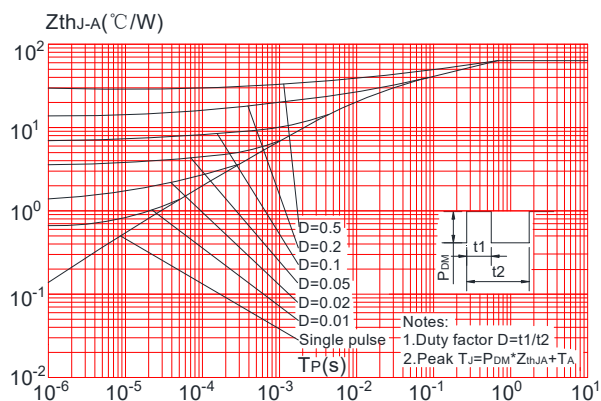
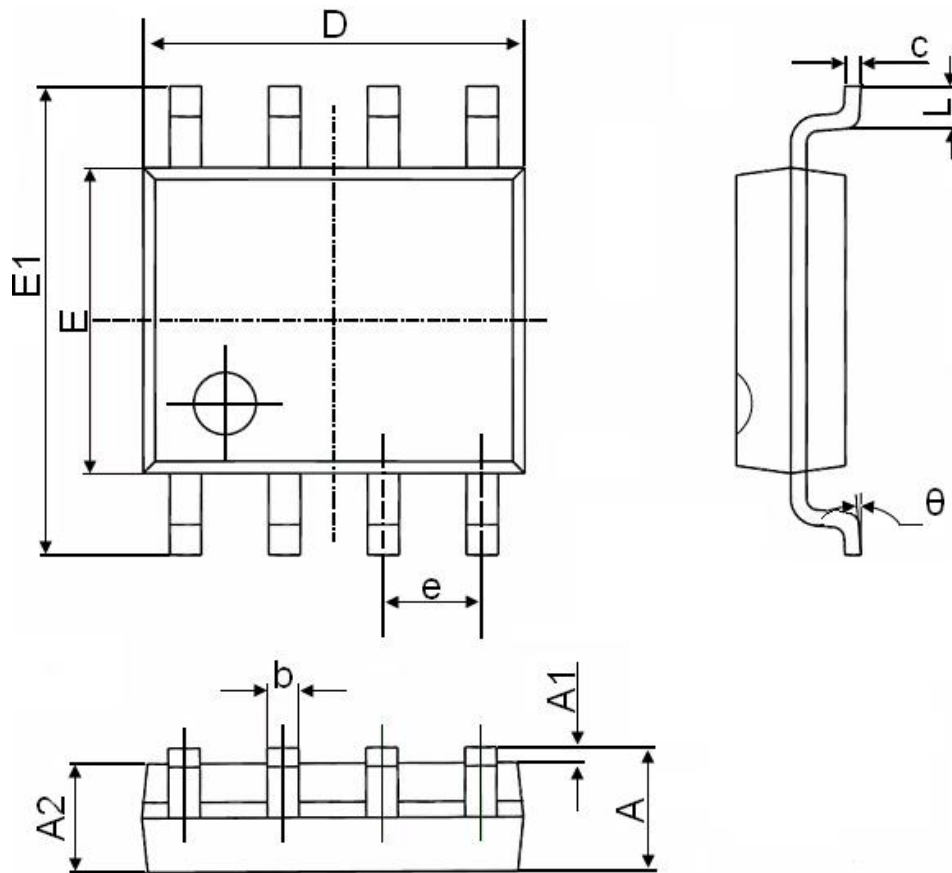


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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°