

N-Channel 150V(D-S) MOSFET

Product summary		
V_{DS}	150	V
$R_{DS(ON)}$ (at $V_{GS}=10V$) Typ.	63	mΩ
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	70	mΩ
$I_D(T_C=25^{\circ}C)$	4.6	A

Features

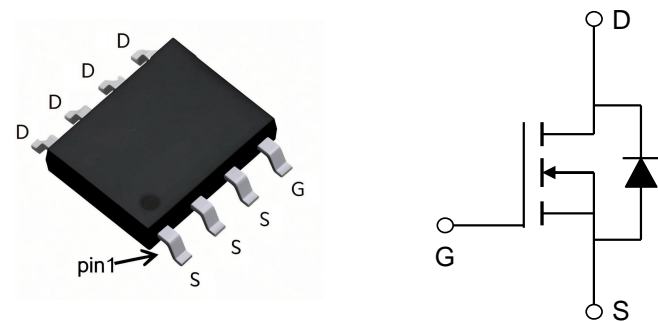
- High Speed Power Switching
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested

Applications

- UPS
- Power Tools
- Hard Switching and High Speed Circuit

Pin Configuration

SOP8



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
ECS05N15B	SOP8	13"	4000pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V _{DS}	Drain-Source Voltage		150	V
V _{GS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current at V _{GS} =10V	T _C =25°C	4.6	A
		T _C =70°C	2.9	A
I _{DM}	Pulse Drain Current Tested		35	A
P _D	Power Dissipation	T _C =25°C	3.1	W
T _J ,T _{STG}	Junciton and Storage Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient	75	$^{\circ}C/W$

Electrical Characteristics (at TJ =25°C Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250uA	150	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =150V,V _{GS} =0V	--	--	1	uA
I _{GSS}	Gate-Body Leakage Current	V _{DS} =0V,V _{GS} =±20V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	1.0	--	3.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V,I _D =5A	--	63	75	mΩ
		V _{GS} =4.5V,I _D =4A	--	70	88	mΩ
V _{SD}	Forward Voltage	I _{SD} =5A,V _{GS} =0V	--	0.9	1.2	V
Dynamic Parameters						
C _{iss}	Input Capacitance	V _{GS} =0V,V _{DS} =75V f=1MHZ	--	637	--	pF
C _{oss}	Output Capacitance		--	42	--	pF
C _{rss}	Reverse Transfer Capacitance		--	15	--	pF
Q _g	Total Gate Charge	V _{DS} =75V,I _D =5A V _{GS} =10V	--	12.3	--	nC
Q _{gs}	Gate-Source Charge		--	1.5	--	nC
Q _{gd}	Gate-Drain Charge		--	4.1	--	nC
Switching Parameters						
t _{D(on)}	Turn-on Delay Time	V _{DD} =75V,I _D =5A R _G =10Ω,V _{GS} =10V	--	10.2	--	nS
t _r	Turn-on Rise Time		--	7.3	--	nS
t _{D(off)}	Turn-off Delay Time		--	13.5	--	nS
t _f	Turn-off Fall Time		--	3.2	--	nS
t _{rr}	Reverse Recovery Time	V _R =75V,I _F =5A di/dt=100A/us	--	51	--	nS
Q _{rr}	Reverse Recovery Charge		--	68	--	nC

Typical Characteristics

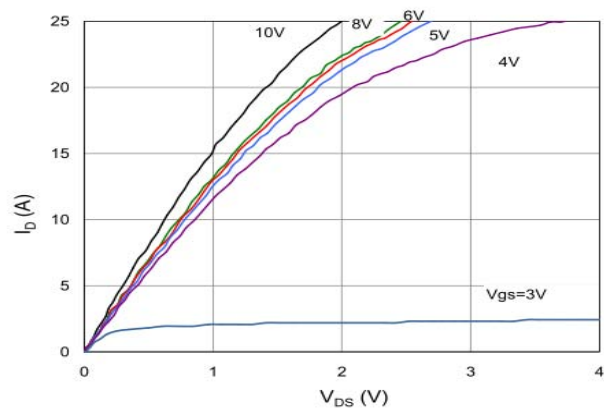


Figure1. Output Characteristics

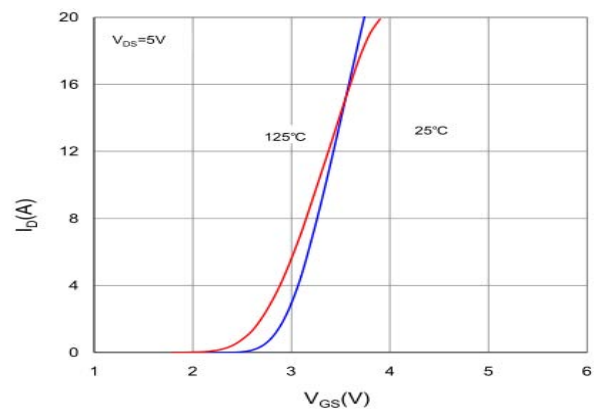


Figure2. Transfer Characteristics

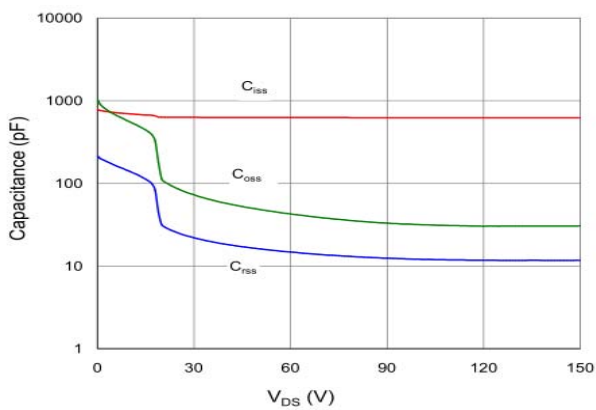


Figure3. Capacitance Characteristics

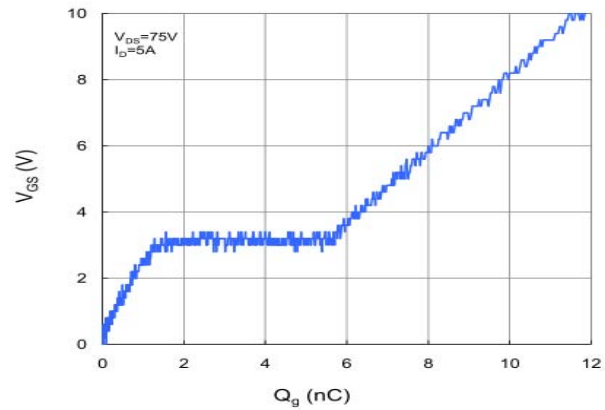


Figure4. Gate Charge

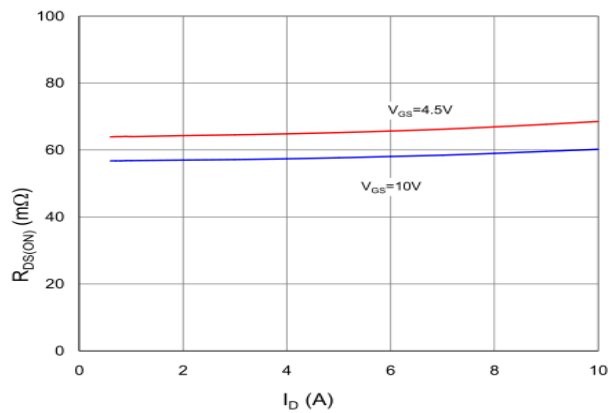


Figure5. Drain-Source on Resistance

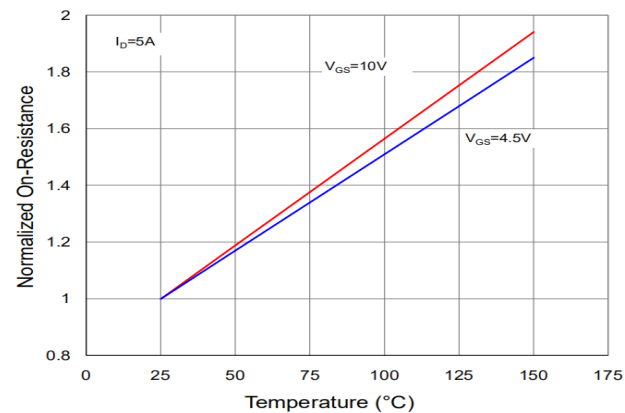


Figure6. Normalized On-Resistance vs. Junction Temperature

Typical Characteristics

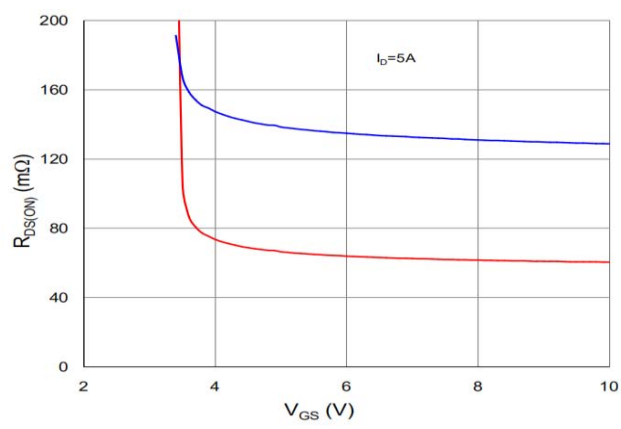


Figure7. On-Resistance vs. Gate-Source Voltage

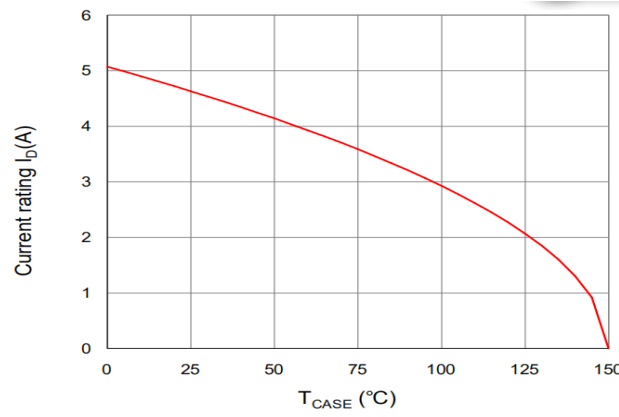


Figure8. Drain Current vs. Case Temperature

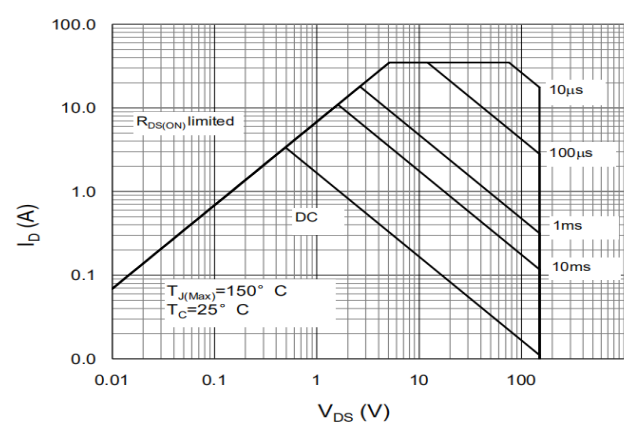


Figure9. Safe Operation Area

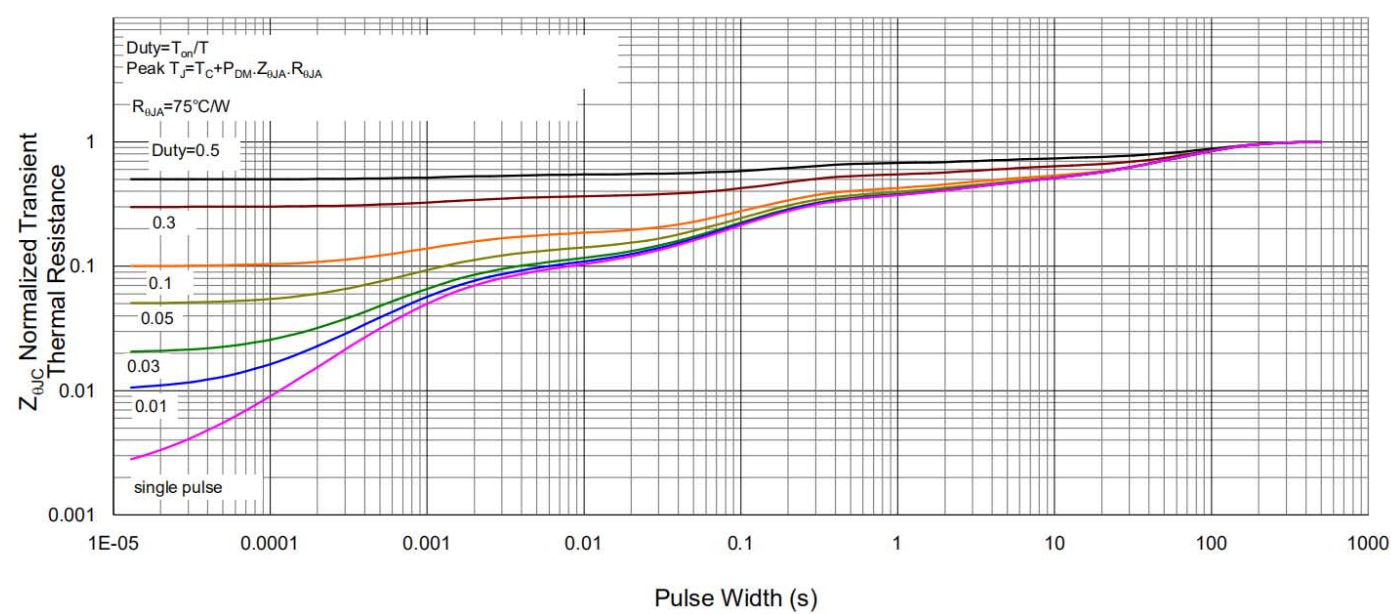


Figure 10. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

Typical Characteristics

Figure A: Gate Charge Test Circuit & Waveforms

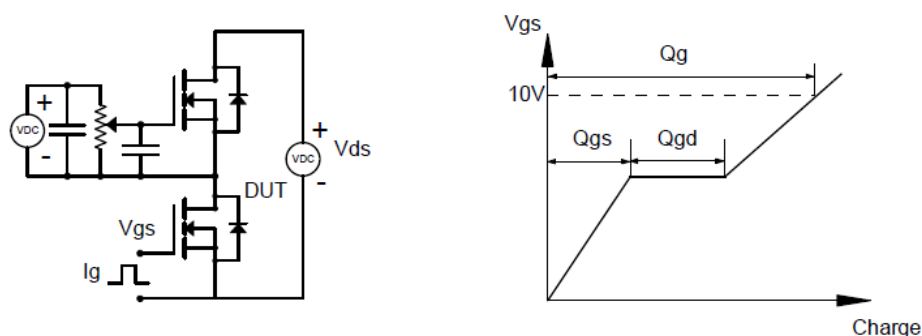


Figure B: Resistive Switching Test Circuit & Waveforms

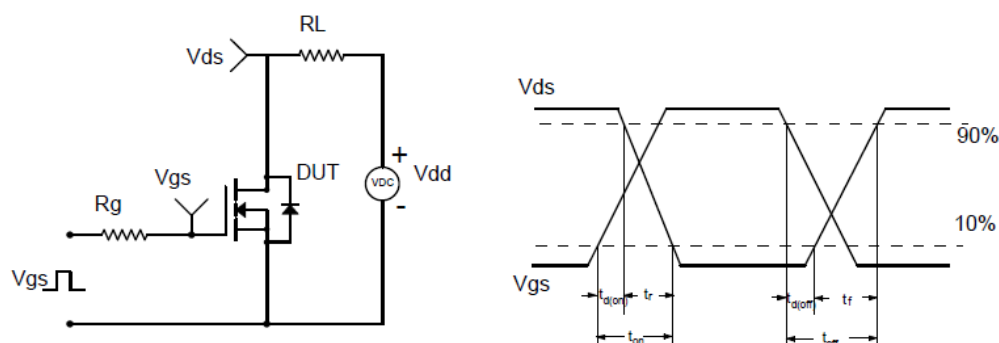


Figure C: Unclamped Inductive Switching (UIS) Test

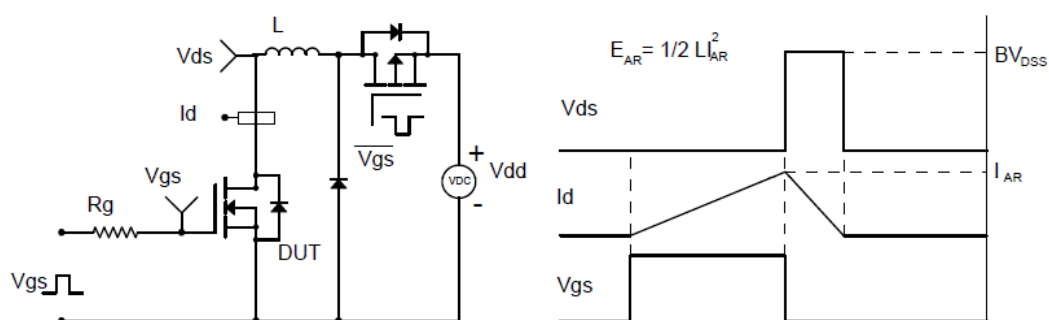
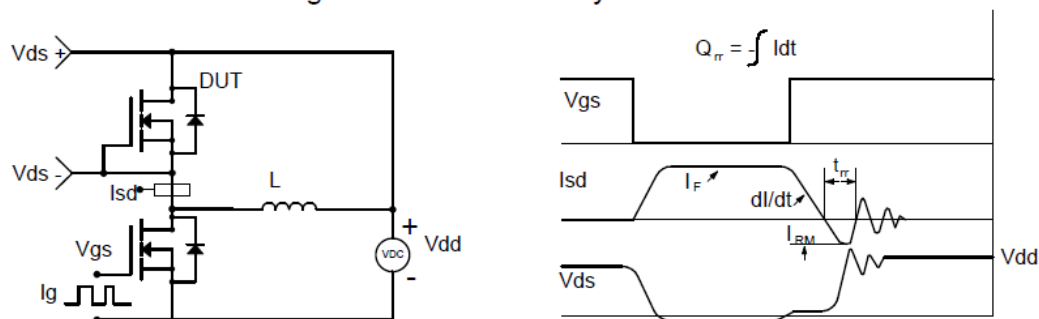
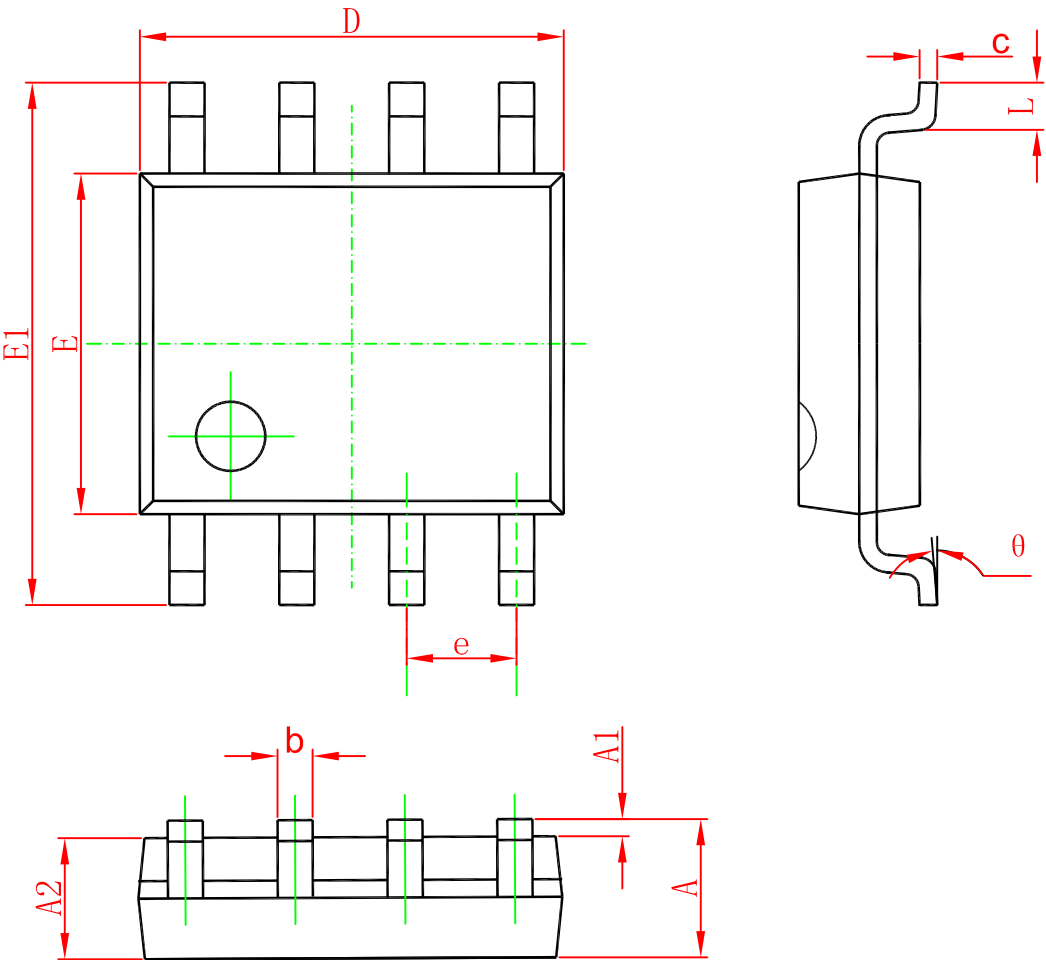


Figure D: Diode Recovery Test Circuit & Waveforms



SOP8 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°