

DESCRIPTION

The 9435 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 load switch or in PWM applications.

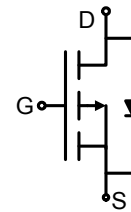
GENERAL FEATURES

- High Power and current handling capability
- RoHS Compliant
- Surface Mount Package

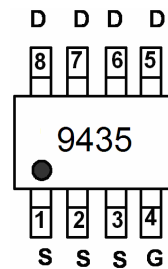
Application

- PWM applications
- Load switch
- Power management

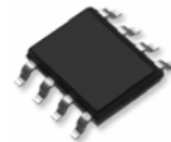
V_{DSS}	$R_{DS(ON)}$ @ -4.5V(Typ)	$R_{DS(ON)}$ @ -10V(Typ)	I_D
-30V	73m Ω	48m Ω	-5.1 A



Schematic diagram



Marking and pin Assignment



SOP-8

Ordering Information

Part Number	Marking	Case	Packaging
9435	9435	SOP-8	4000pcs/Reel

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-5.1	A
Drain Current-Pulsed (Note 1)	I_{DM}	-20	A
Maximum Power Dissipation	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	50	°C/W
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Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V

Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-5.1A	-	48	55	mΩ
		V _{GS} =-4.5V, I _D =-4.2A	-	73	105	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-15V, I _D =-4.5A	4	7	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1.0MHz	-	1040	-	PF
Output Capacitance	C _{oss}		-	420	-	PF
Reverse Transfer Capacitance	C _{rss}		-	150	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V, R _{GEN} =6Ω	-	15	-	nS
Turn-on Rise Time	t _r		-	13	-	nS
Turn-Off Delay Time	t _{d(off)}		-	58	-	nS
Turn-Off Fall Time	t _f		-	21	-	nS
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-5.1A, V _{GS} =-10V	-	12	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	nC
Gate-Drain Charge	Q _{gd}		-	3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V, I _S =-1.7A	-	-	-1.2	V

Notes:

Guaranteed by design, not subject to production

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

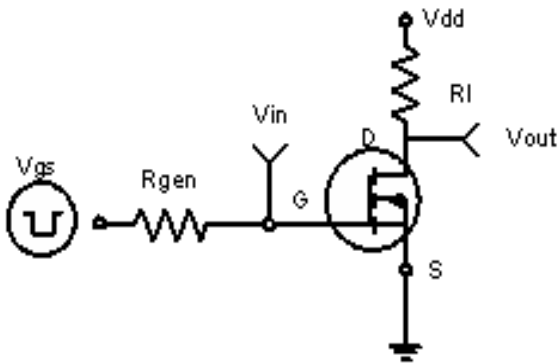


Figure 1: Switching Test Circuit

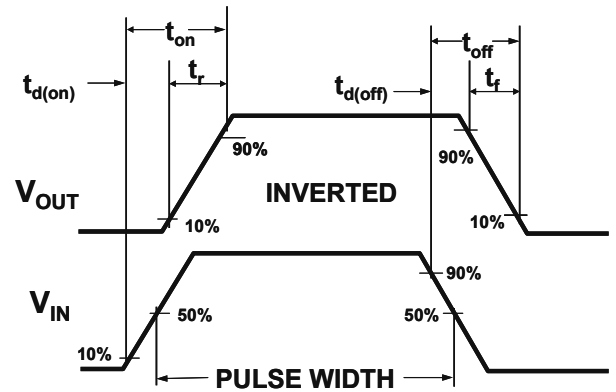


Figure 2: Switching Waveforms

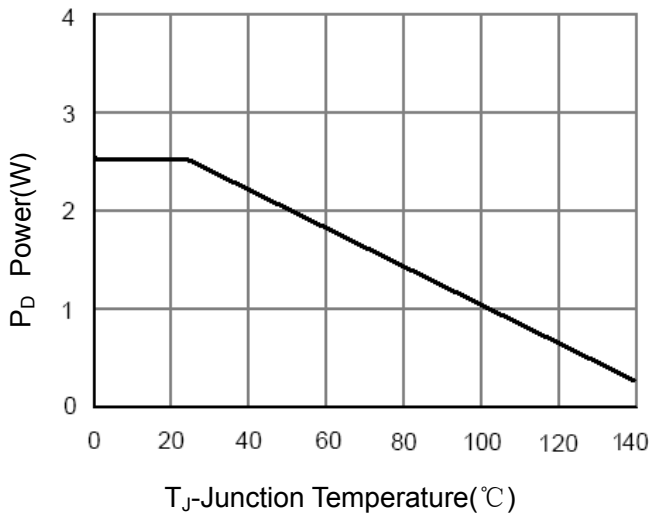


Figure 3 Power Dissipation

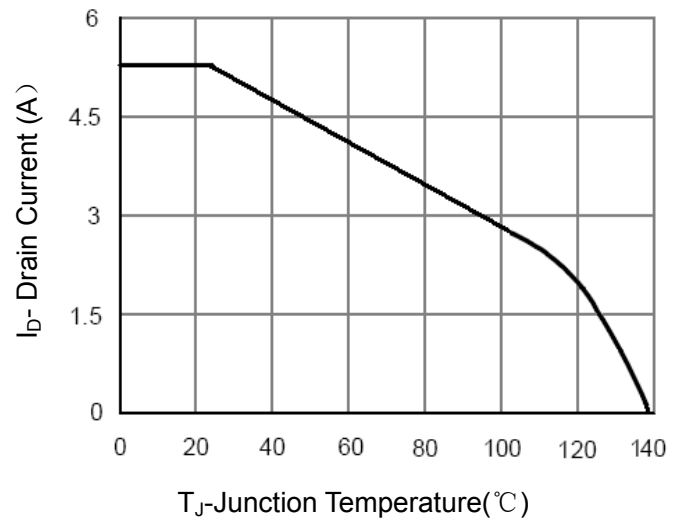


Figure 4 Drain Current

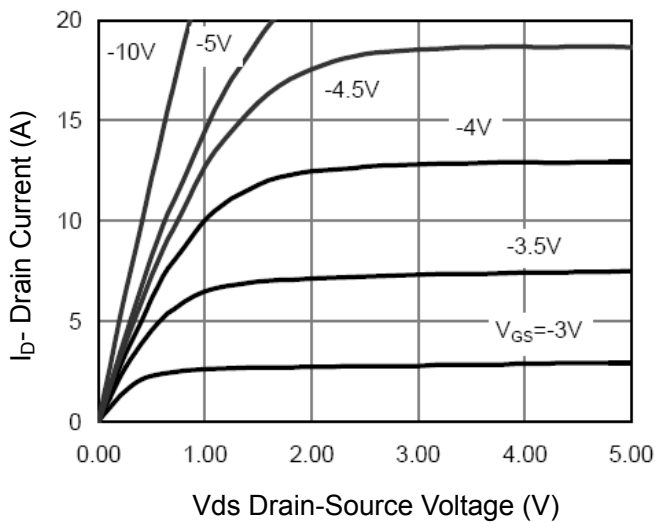


Figure 5 Output CHARACTERISTICS

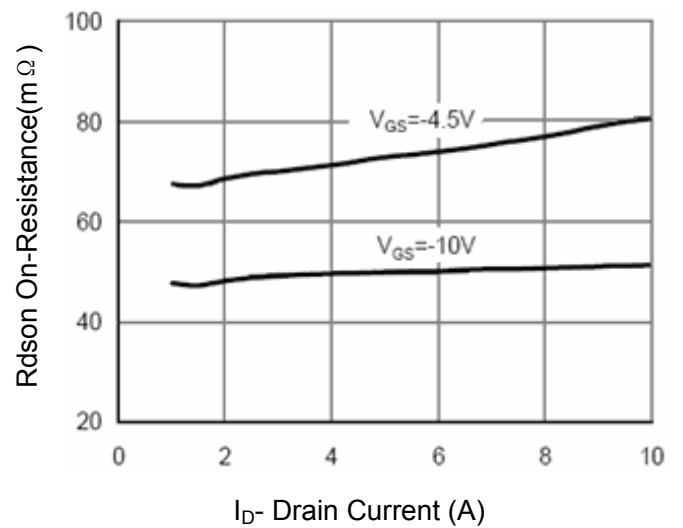


Figure 6 Drain-Source On-Resistance

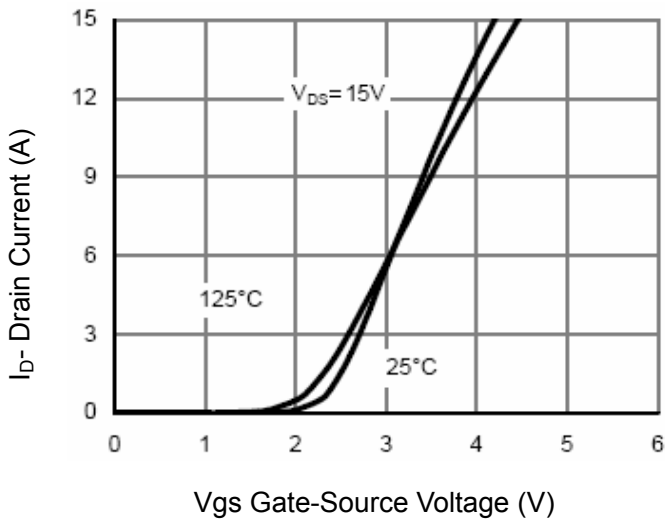


Figure 7 Transfer Characteristics

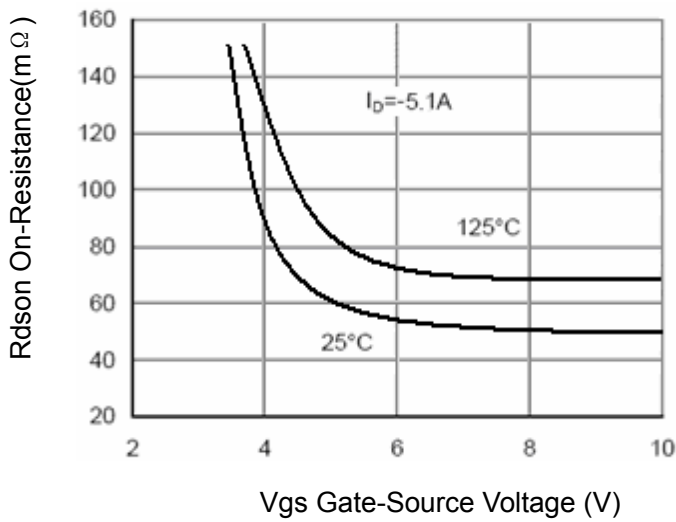


Figure 9 $R_{DS(on)}$ vs V_{GS}

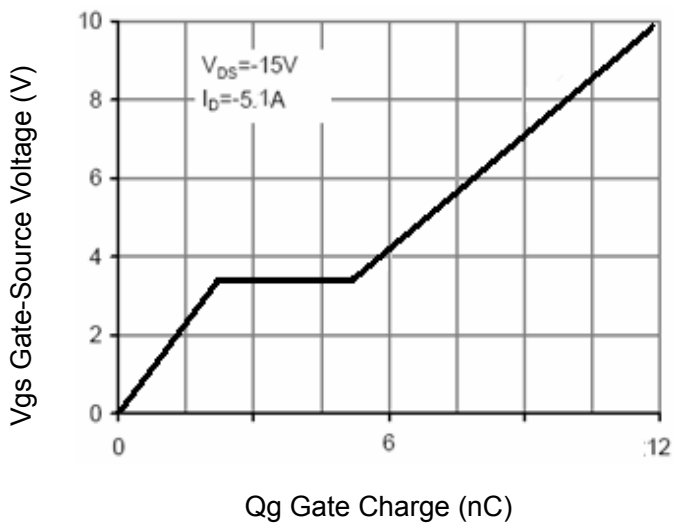


Figure 11 Gate Charge

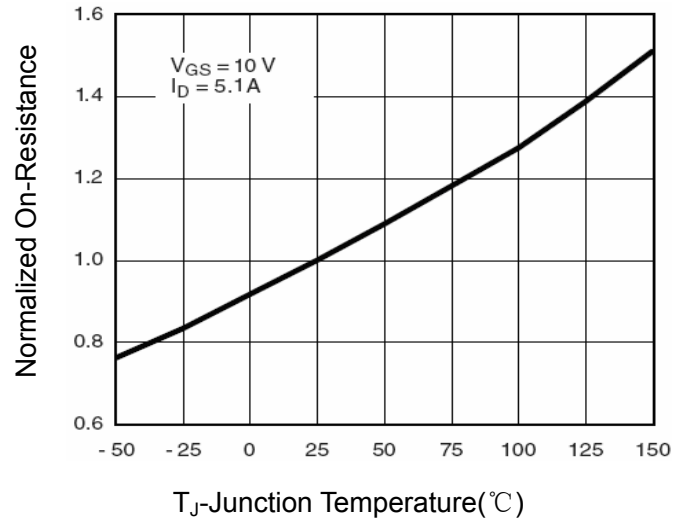


Figure 8 Drain-Source On-Resistance

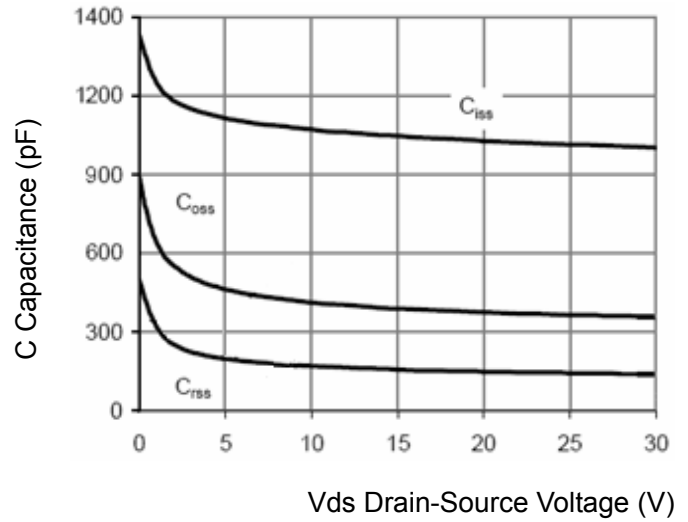


Figure 10 Capacitance vs V_{DS}

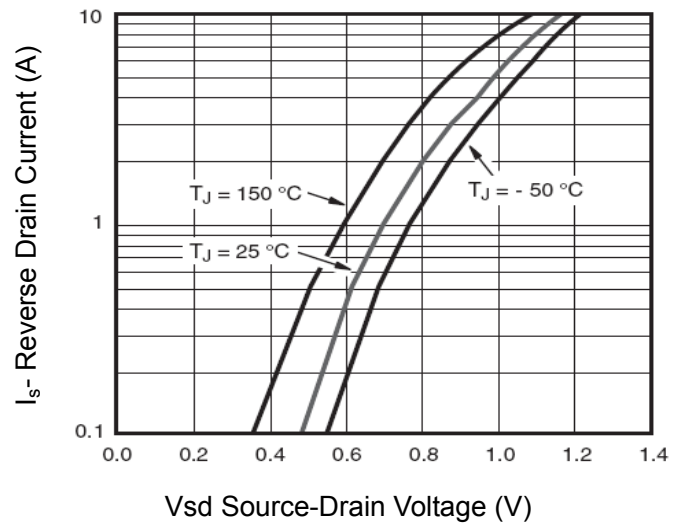


Figure 12 Source- Drain Diode Forward

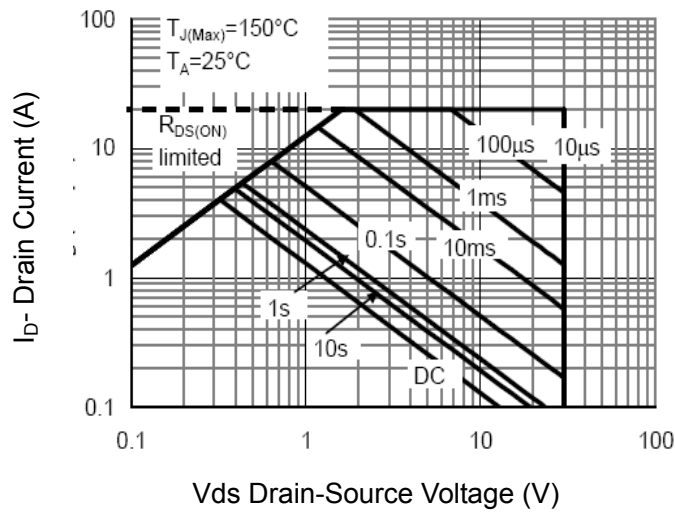


Figure 13 Safe Operation Area

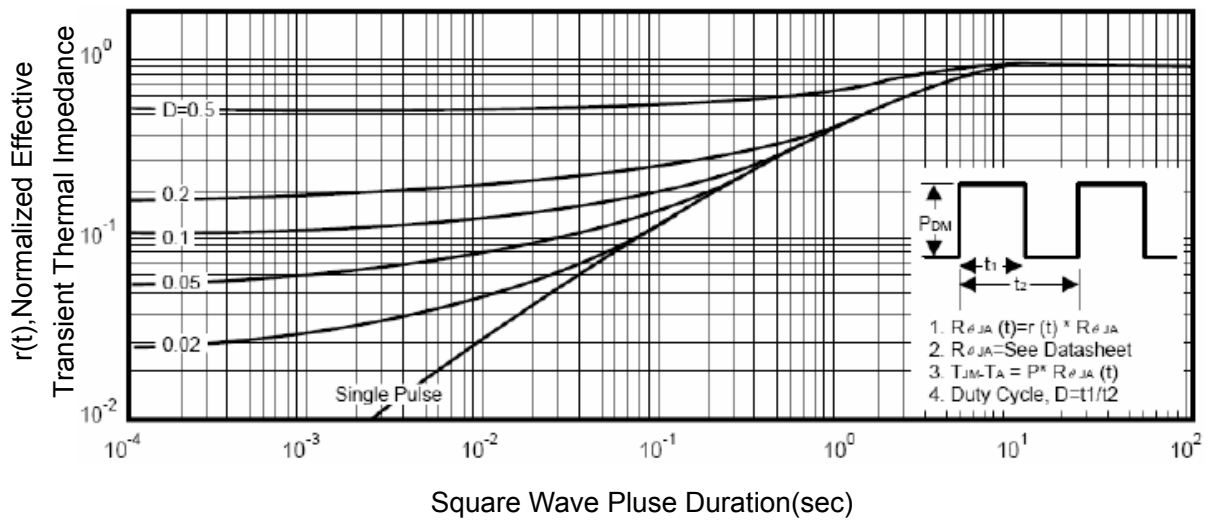
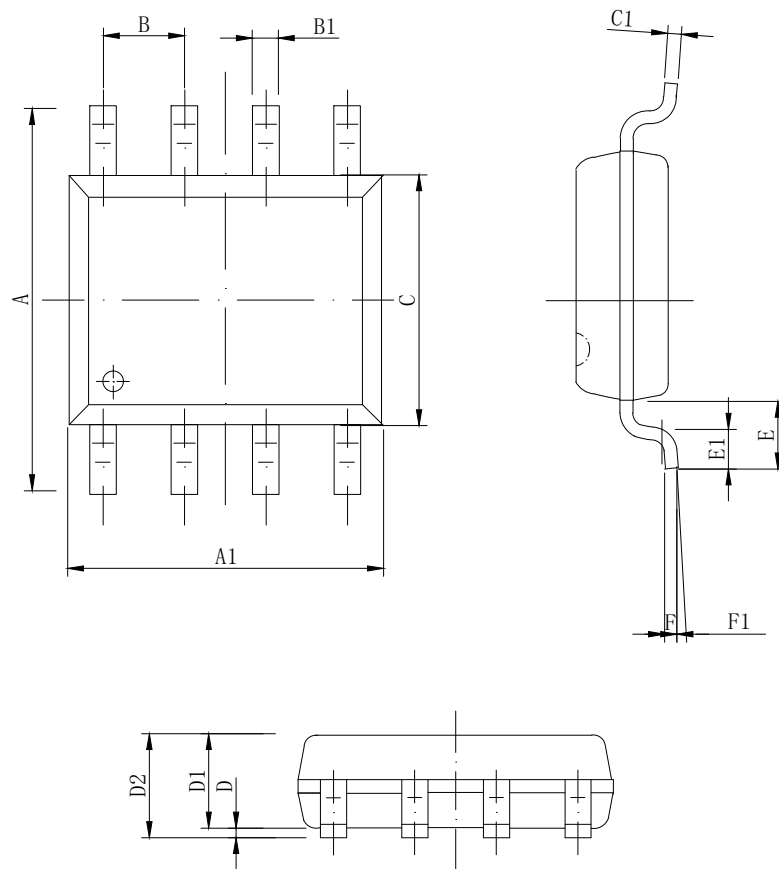


Figure 14 Normalized Maximum Transient Thermal Impedance

SOP-8 Package information



DIM	MIN	NOM	MAX
A	5.800	6.000	6.200
A1	4.800	4.900	5.000
B	1.270BSC		
B1	0.35 ^ 8x	0.40 ^ 8x	0.45 ^ 8x
C	3.780	3.880	3.980
C1	—	0.203	0.253
D	0.050	0.150	0.250
D1	1.350	1.450	1.550
D2	1.500	1.600	1.700
E	1.060 REF		
E1	0.400	0.700	0.100
F	0.250BSC		
F1	2°	4°	6°

All Dimensions in mm