

KY9435

-30V P-Channel Mosfet

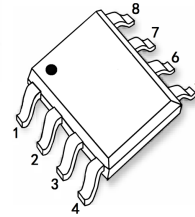
FEATURES

- $R_{DS(ON)} \leq 55m\Omega$ (43m Ω Typ.)
@ $V_{GS}=-10V$
- $R_{DS(ON)} \leq 90m\Omega$ (55m Ω Typ.)
@ $V_{GS}=-4.5V$

APPLICATIONS

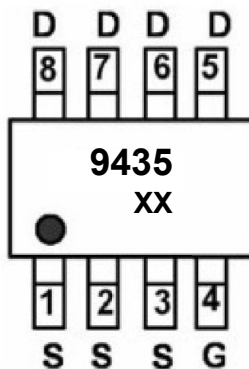
- PWM Applications
- Load Switch
- Power Management

SOP-8



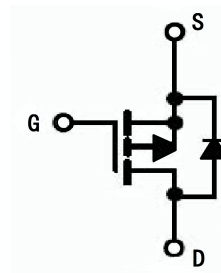
1: S 3: S 5: D 7: D
2: S 4: G 6: D 8: D

MARKING



9435: Device Code
XX: DC Code

P-CHANNEL MOSFET



Absolute Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise specified)

Symbol	Param	Max.	Units	
V_{DSS}	Drain-Source Voltage	-30	V	
V_{GSS}	Gate-Source Voltage	± 20	V	
I_D	Continuous Drain Current	$T_a= 25^\circ\text{C}$	-5.1	A
		$T_a= 100^\circ\text{C}$	-3.2	A
I_{DM}	Pulsed Drain Current ^{note1}	-20	A	
P_D	Power Dissipation	$T_a= 25^\circ\text{C}$	2.5	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	50	$^\circ\text{C}/\text{W}$	
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$	

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -30V, V_{GS} = 0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.35	-2	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS} = -10V, I_D = -5.1A$	-	43	55	m Ω
		$V_{GS} = -4.5V, I_D = -4.2A$	-	55	90	
g_{FS}	Forward Transconductance	$V_{DS} = -5V, I_D = -5.1A$	4	-	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	980	-	pF
C_{oss}	Output Capacitance		-	390	-	pF
C_{riss}	Reverse Transfer Capacitance		-	135	-	pF
Q_g	Total Gate Charge	$V_{DS} = -15V, I_D = -5.1A,$ $V_{GS} = -10V$	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2.0	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.8	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -15V, I_D = -1A,$ $V_{GS} = -10V, R_{GEN} = 6\Omega$	-	14	-	ns
t_r	Turn-on Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	56	-	ns
t_f	Turn-off Fall Time		-	20	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-5.1	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -5.1A$	-	-	-1.2	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

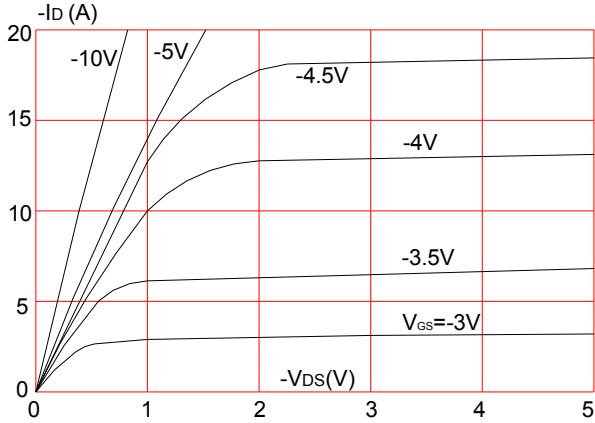


Figure 2: Typical Transfer Characteristics

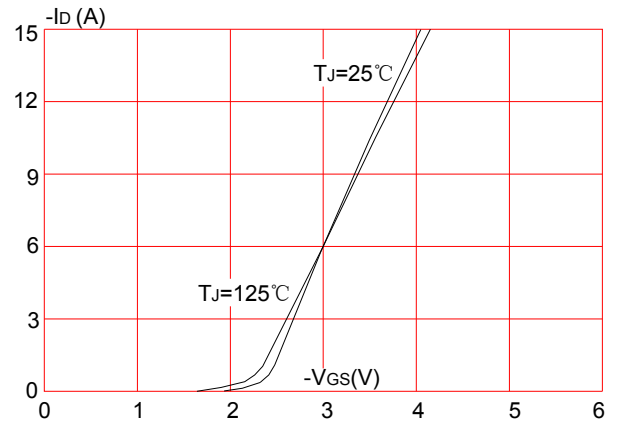


Figure 3: On-resistance vs. Drain Current

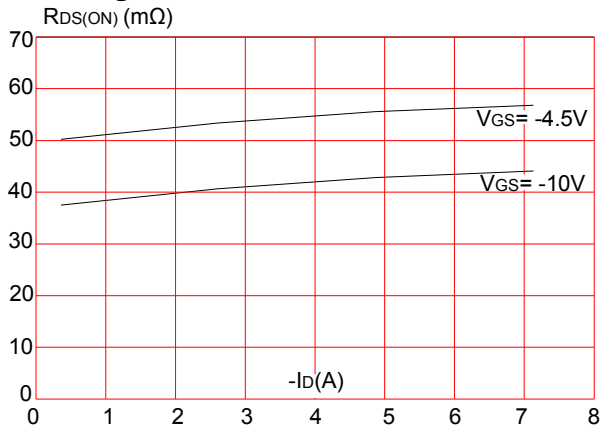


Figure 4: Body Diode Characteristics

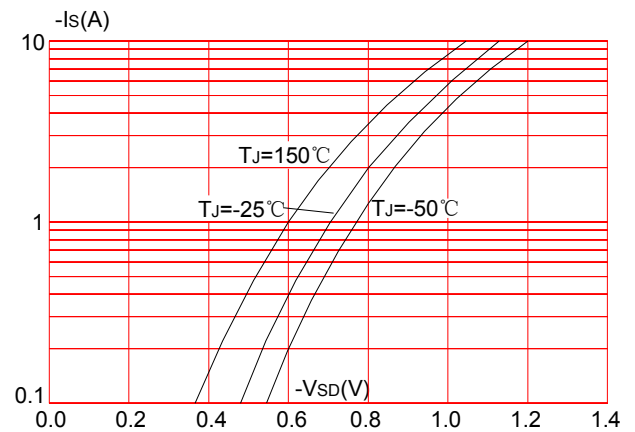


Figure 5: Gate Charge Characteristics

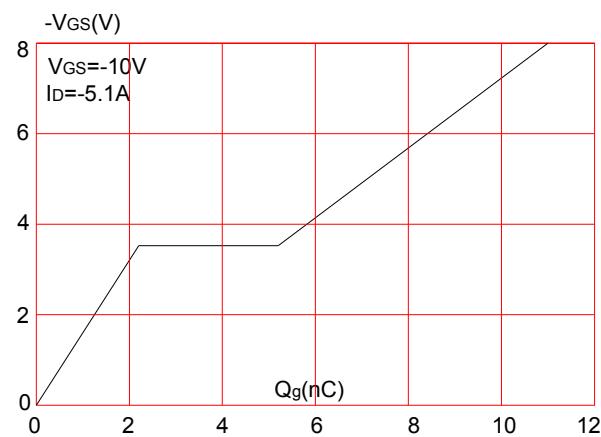
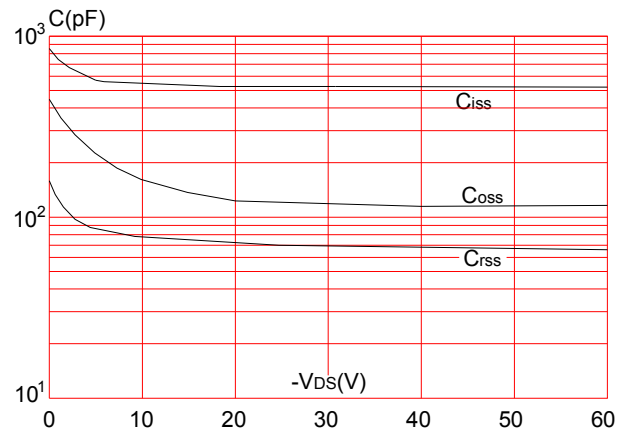


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics (cont.)

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

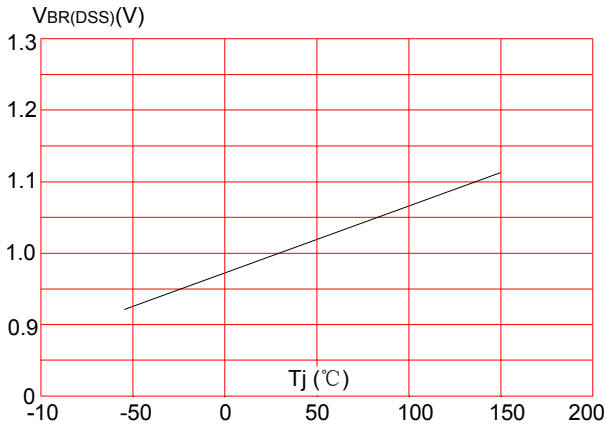


Figure 8: Normalized on Resistance vs. Junction Temperature

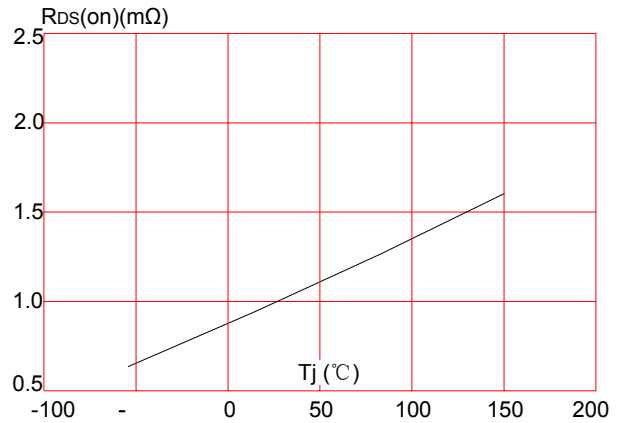


Figure 9: Maximum Safe Operating Area

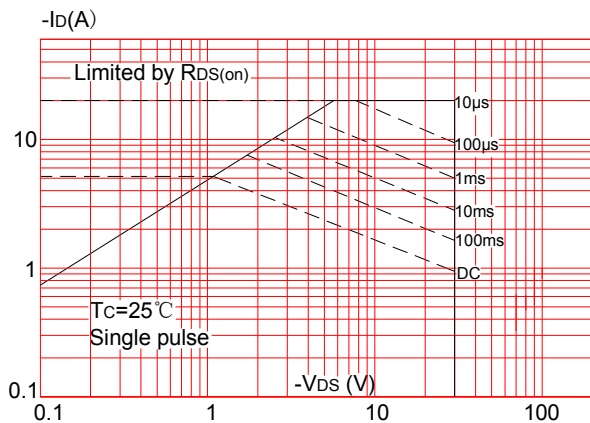


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

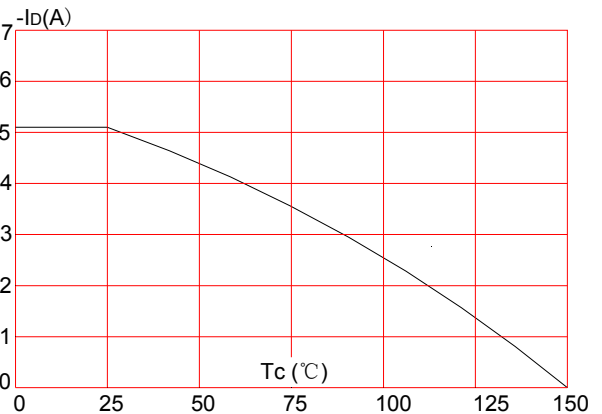
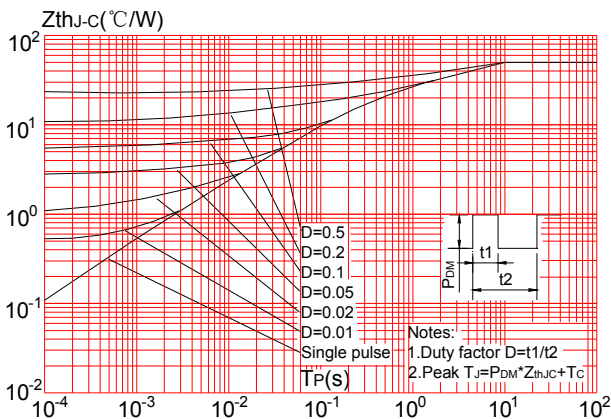
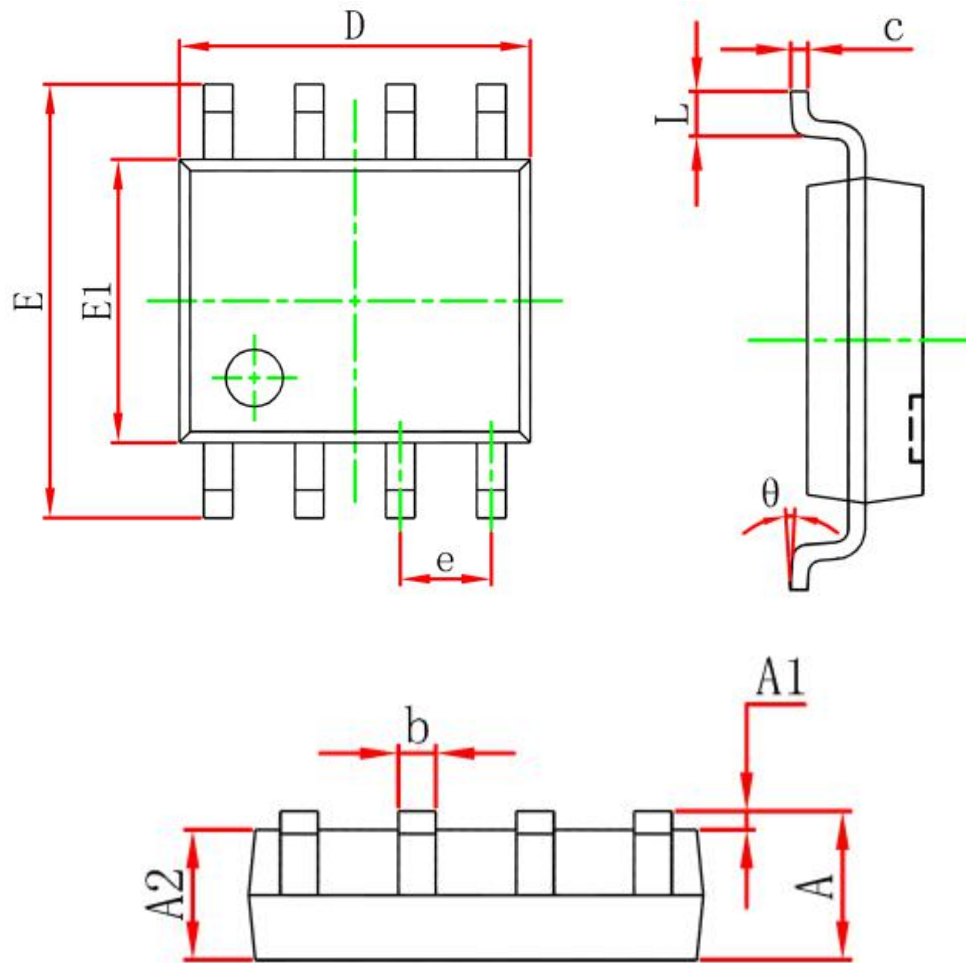


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOP-8)



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SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.450	1.750	0.057	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	0.007	0.010
D	4.700	5.100	0.185	0.201
E1	3.800	4.000	0.150	0.157
E	5.800	6.200	0.228	0.244
e	1.27(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°