

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry.

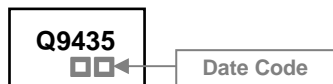
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life
- Miniature SOP-8 Surface Mount Package Saves Board Space
- High power and current handling capability
- Extended VGS range for battery pack applications

APPLICATION

PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	4K	13 inch

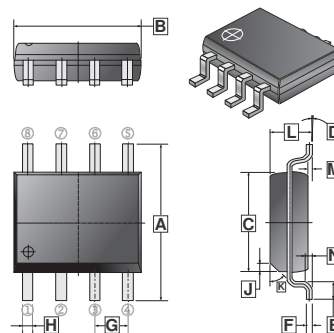
MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-5.1	A
Pulsed Drain Current	I_{DM}	-20	A
Single Pulsed Avalanche Energy ¹	E_{AS}	20	mJ
Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	89	$^{\circ}\text{C} / \text{W}$
Lead Temperature for Soldering Purposes @ 1/8" from case for 10s	T_L	260	$^{\circ}\text{C}$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	150, -55 ~ 150	$^{\circ}\text{C}$

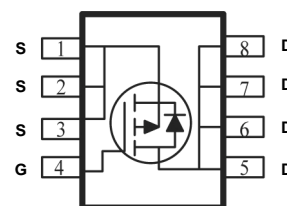
Notes:

1. $V_{DD} = -50\text{V}, L = 0.5\text{mH}, R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$.

SOP-8



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45 $^{\circ}$	
D	0 $^{\circ}$	8 $^{\circ}$	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				



ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

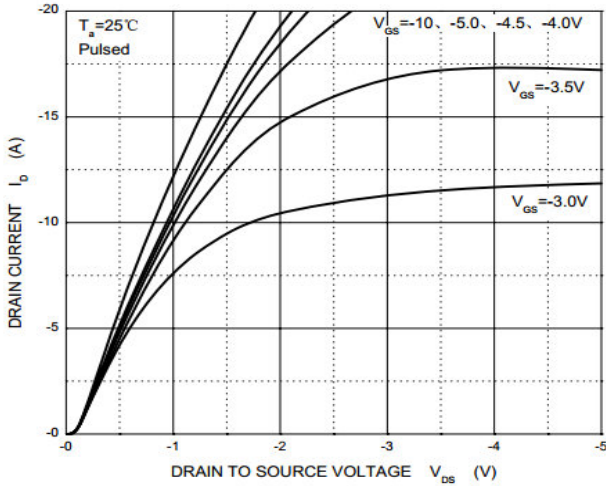
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-30	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	$V_{DS} = -24\text{V}, V_{GS}=0$
Gate-Body Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS}=0, V_{GS} = \pm 20\text{V}$
On Characteristics ¹						
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	60	m Ω	$V_{GS} = -10\text{V}, I_D = -4.6\text{A}$
		-	-	70		$V_{GS} = -6\text{V}, I_D = -4.1\text{A}$
		-	-	105		$V_{GS} = -4.5\text{V}, I_D = -2\text{A}$
Forward Transconductance	g_{fs}	-	5	-	S	$V_{DS} = -15\text{V}, I_D = -4.6\text{A}$
Dynamic Characteristics						
Total Gate Charge	Q_g	-	40	-	nC	$I_D = -4.6\text{A}$ $V_{DS} = -15\text{V}$ $V_{GS} = -10\text{V}$
Gate-Source Charge	Q_{gs}	-	4	-		
Gate-Drain Charge	Q_{gd}	-	6.3	-		
Turn-On Delay Time	$T_{d(on)}$	-	30	-	nS	$V_{DD} = -15\text{V}$ $I_D = -1\text{A}$ $V_{GEN} = -10\text{V}$ $R_L = 15\Omega$ $R_G = 6\Omega$
Rise Time	T_r	-	60	-		
Turn-Off Delay Time	$T_{d(off)}$	-	120	-		
Fall Time	T_f	-	100	-		
Gate Resistance	R_g	-	5.8	-	Ω	$f=1\text{MHz}, V_{DS}=V_{GS}=0$
Drain-Source Diode Characteristics						
Diode Forward Voltage ¹	V_{SD}	-	-	-1.2	V	$I_S = -2.6\text{A}, V_{GS}=0$
Continuous Drain-Source Diode Forward Current	I_S	-	-	-5.1	A	
Pulsed Drain-Source Diode Forward Current	I_{SM}	-	-	-20	A	

Notes:

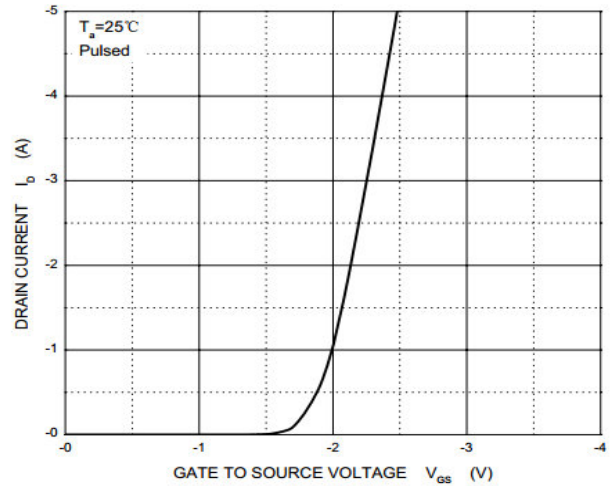
1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVE

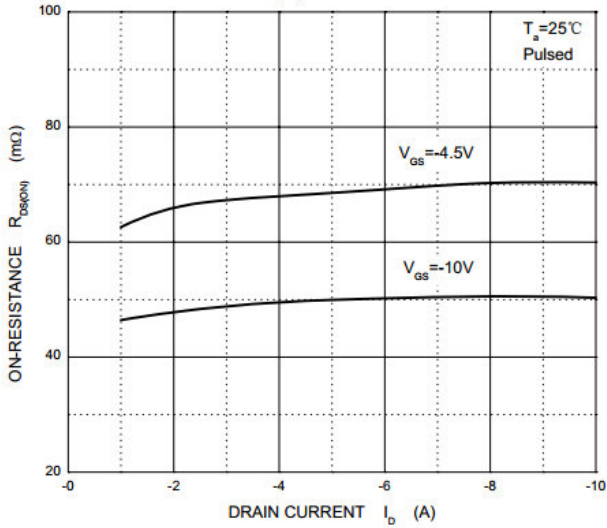
Output Characteristics



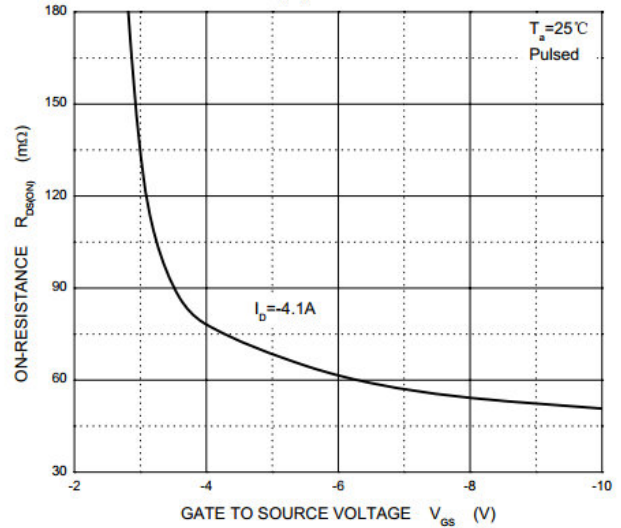
Transfer Characteristics



$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}

