

Features

- Advanced Trench MOSFET Process Technology
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

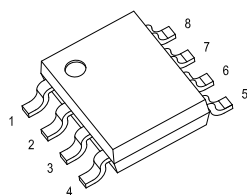
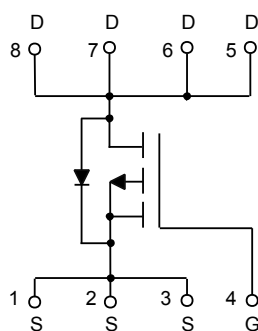
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 89°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	-30	V
Gate -Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-10	A
Drain Current-Pulsed	I_{DM}	-36	A
Power Dissipation	P_D	1.4	W
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	20	mJ

Note:

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

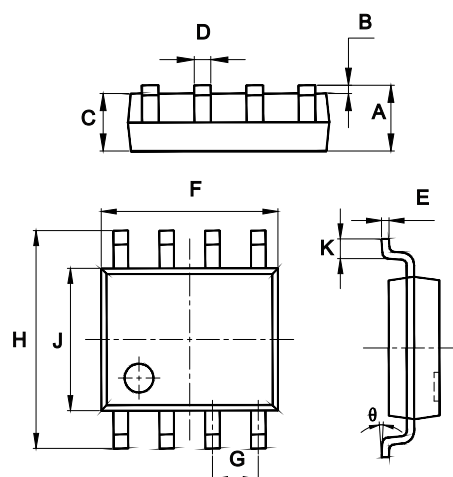
Internal Structure



Marking:Q4435A

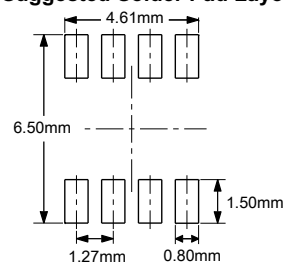
P-Channel Power MOSFET

SOP-8



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.35	1.75	
B	0.004	0.010	0.10	0.25	
C	0.053	0.061	1.35	1.55	
D	0.013	0.020	0.33	0.51	
E	0.007	0.010	0.17	0.25	
F	0.185	0.200	4.70	5.10	
G	0.050		1.270		TYP.
H	0.228	0.244	5.80	6.20	
J	0.150	0.157	3.80	4.00	
K	0.016	0.050	0.40	1.27	
θ	0°	8°	0°	8°	

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate-Threshold Voltage ^(Note1)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.7	-3.0	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$			-1.0	μA
Drain-Source On-Resistance ^(Note1)	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5.0A$		14	24	m Ω
		$V_{GS}=-4.5V, I_D=-5.0A$		23	35	
Forward Transconductance ^(Note1)	g_{FS}	$V_{DS}=-10V, I_D=-9.1A$	20			S
Dynamic Characteristics ^(Note2)						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$		1350		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			185		
Switching Characteristics ^(Note2)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1.0A, V_{GS}=-10V, R_{GEN}=1\Omega, R_L=15\Omega$			15	ns
Turn-On Rise Time	t_r				15	
Turn-Off Delay Time	$t_{d(off)}$				70	
Turn-Off Fall Time	t_f				25	
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		5.8		Ω
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-9.1A, V_{GS}=-10V$			50	nC
					25	
Gate-Source Charge	Q_{gs}	$V_{DS}=-15V, I_D=-9.1A, V_{GS}=-4.5V$		4.0		
Gate-Drain Charge	Q_{gd}			7.5		
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_S=-2A$			-1.2	V
Continuous Drain-Source Diode Forward Current	I_S				-10	A
Pulsed Drain-Source Diode Forward Current	I_{SM}				-36	A

Note:

1.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2.Guaranteed by design, not subject to production testing.

Curve Characteristics

Fig. 1 - Output Characteristics

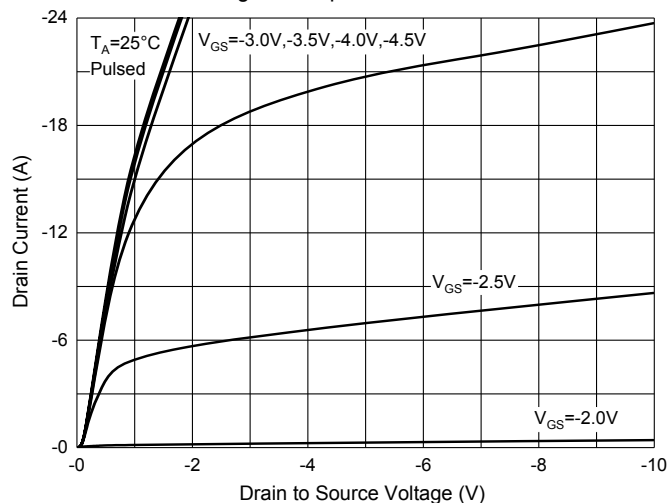


Fig. 2 - Transfer Characteristics

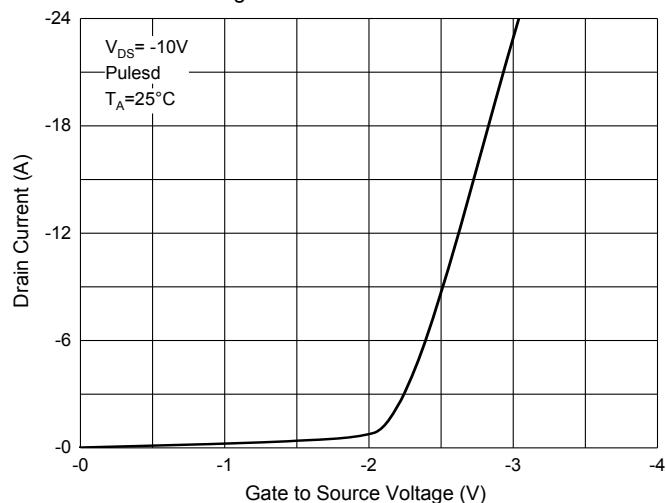


Fig. 3 - $R_{DS(ON)} - I_D$

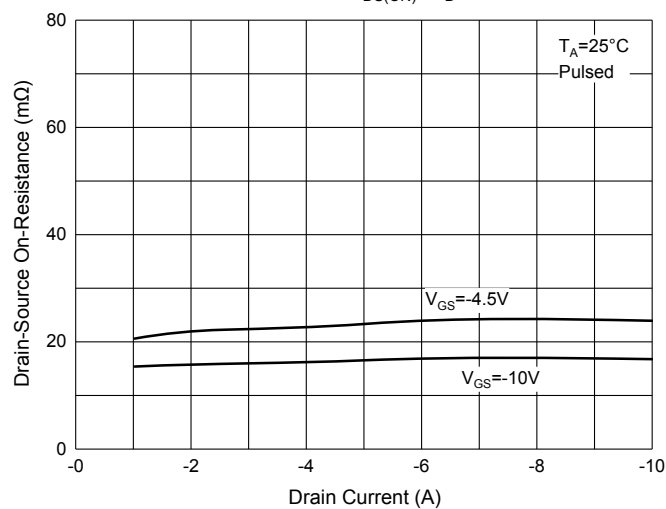


Fig. 4 - $R_{DS(ON)} - V_{GS}$

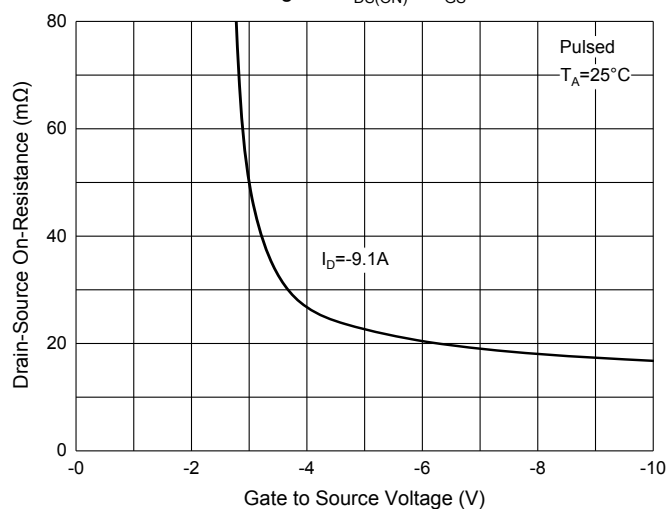


Fig. 5 - Threshold Voltage

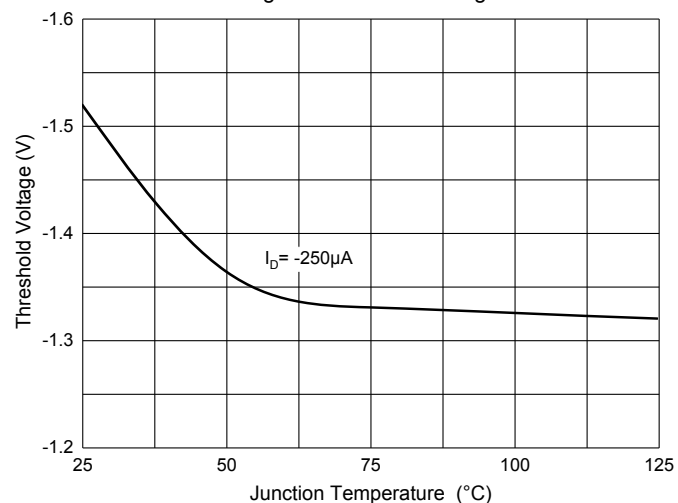
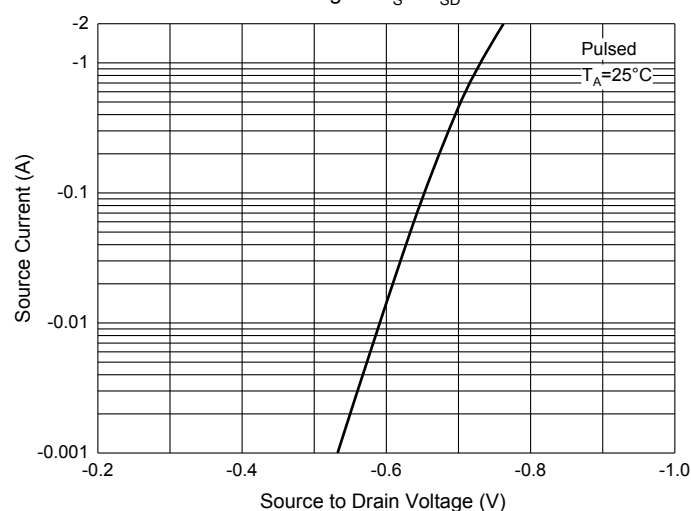


Fig. 6 - $I_S - V_{SD}$



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:4Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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