

Features

- 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

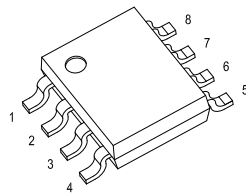
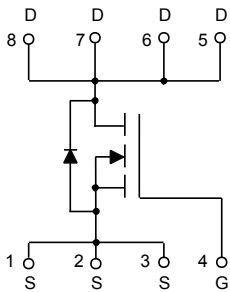
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 89°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	30	V
Gate -Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	7.5	A
Single Pulsed Avalanche Energy ^(Note1)	E_{AS}	72	mJ
Pulsed Drain Current	I_{DM}	50	A
Power Dissipation	P_D	1.4	W

Notes :

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

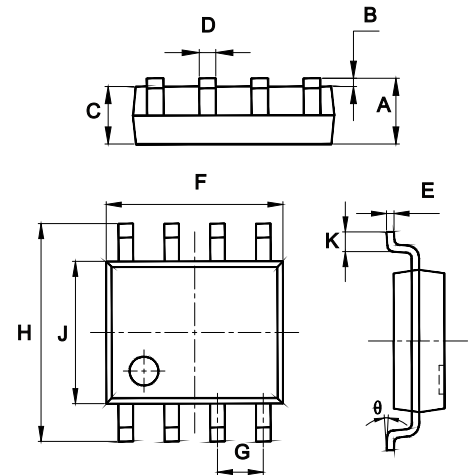
Internal Structure



Marking: Q4410

**N-Channel
Enhancement Mode
Field Effect
Transistor**

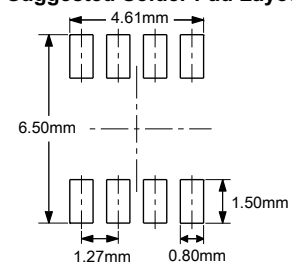
SOP-8



DIMENSIONS

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	1.3	3.0	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Drain-Source On-Resistance ^(Note1)	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		9.0	13.5	m Ω
		$V_{GS}=4.5V, I_D=5.0A$		12	20	
Forward Transconductance ^(Note1)	g_{FS}	$V_{DS}=15V, I_D=5.0A$		8.0		S
Dynamic Characteristics^(Note2)						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1MHz$		9130		pF
Output Capacitance	C_{oss}			625		
Reverse Transfer Capacitance	C_{rss}			387		
Switching Characteristics^(Note2)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=25V, V_{GS}=10V, I_D=1A, R_{GEN}=6\Omega, R_L=25\Omega$			15	ns
Turn-On Rise Time	t_r				15	
Turn-Off Delay Time	$t_{d(off)}$				60	
Turn-Off Fall Time	t_f				25	
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=10A, V_{GS}=10V$			40	nC
Gate-Source Charge	Q_{gs}			5.5		
Gate-Drain Charge	Q_{gd}			3.7		
Source-Drain Diode characteristics						
Diode Forward voltage ^(Note1)	V_{SD}	$V_{GS}=0V, I_S=2.3A$			1.1	V
Drain-Source Diode Forward Current	I_S				7.5	A
Pulsed drain-source diode forward current	I_{SM}				50	A

Notes:

- 1.Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- 2.Guaranteed by design, not subject to production testing.

Curve Characteristics

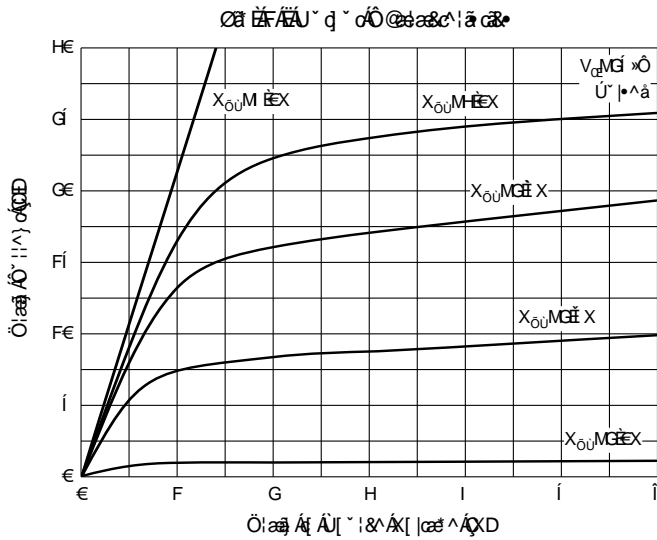


Fig. 2 - Transfer Characteristics

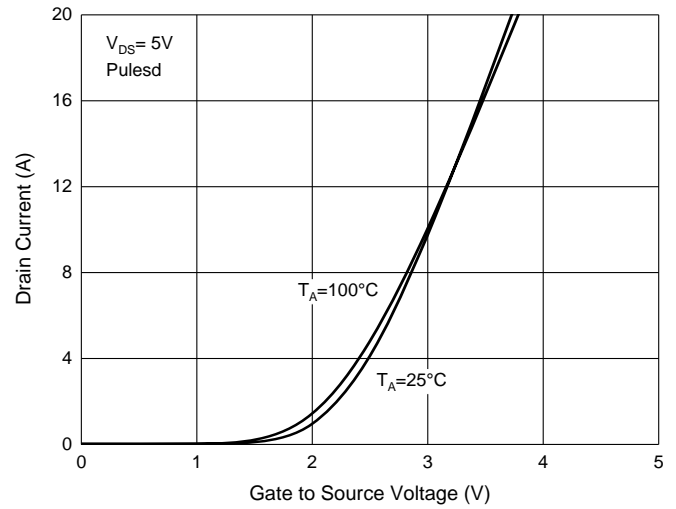


Fig. 3 - $R_{DS(ON)} - I_D$

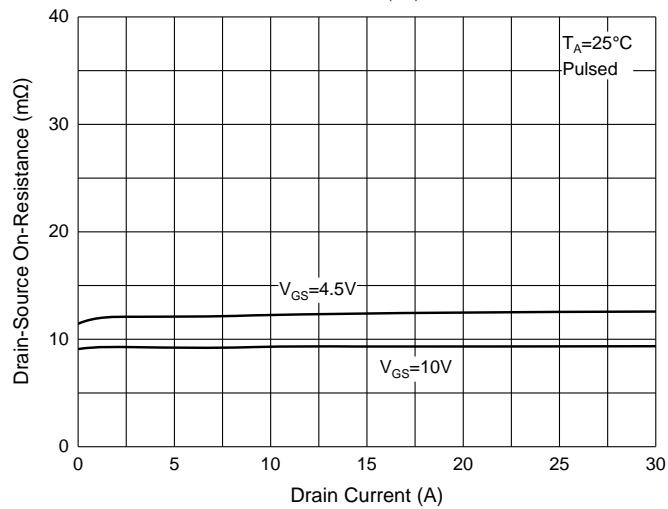


Fig. 4 - $R_{DS(ON)} - V_{GS}$

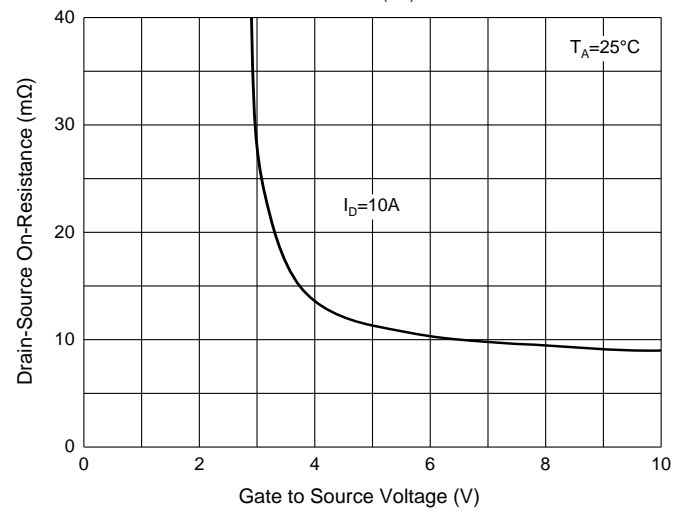


Fig. 5 - Threshold Voltage

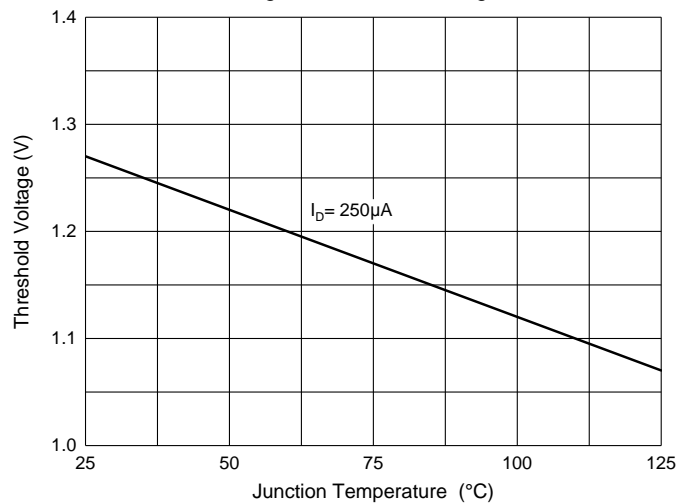
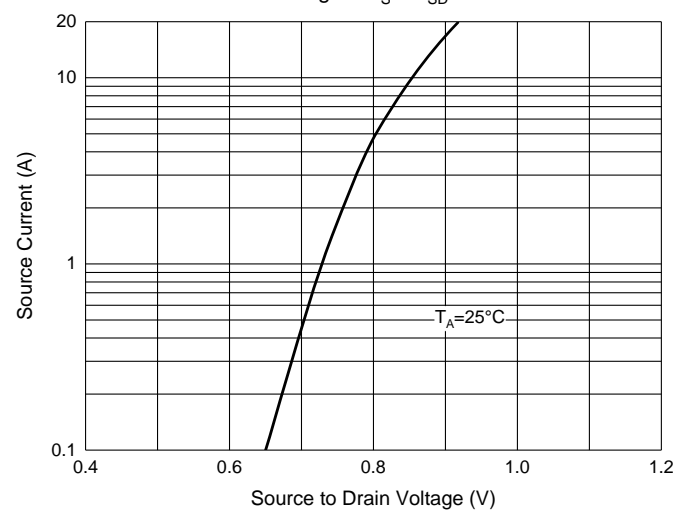


Fig. 6 - $I_S - V_{SD}$



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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