



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	29mΩ@-10V	-7A
	41mΩ@-4.5V	
30V	23mΩ@10V	6.5A
	30mΩ@4.5V	

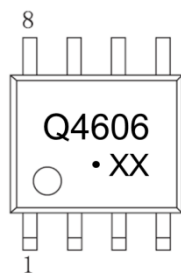
Feature

- Low drain-source on-resistance
- High forward transfer admittance
- Low leakage current

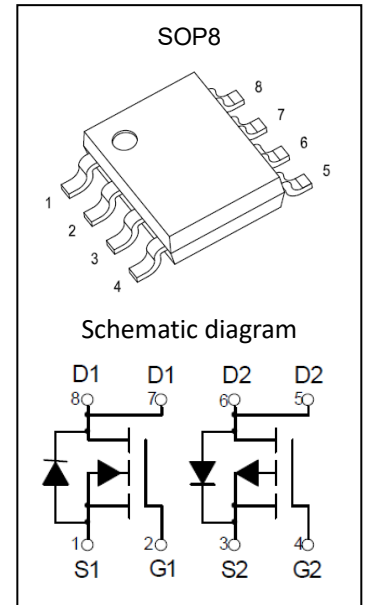
Application

- Low voltage applications

MARKING:



Q4606 = Device Code
XX = Date Code
Solid dot = Green Device



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

Parameter	Symbol	Value	Unit
P-MOSFET			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ⁽¹⁾	I_D	-7.0	A
Pulsed Drain Current	I_{DM}	-16	A
Power Dissipation	P_D	1.4	W
N-MOSFET			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	6.5	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	19	A
Power Dissipation	P_D	1.4	W
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient ⁽²⁾	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}\text{C}$

P-channel MOSFET ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24V, V_{GS} = 0V$			-1	μA
Gate-body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.5	-2.5	V
Drain-source On-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -6.0A$		29	35	m Ω
		$V_{GS} = -4.5V, I_D = -5.0A$		41	58	
Forward Transconductance	g_{FS}	$V_{DS} = -5V, I_D = -6.0A$		6		S
Dynamic Characteristics⁽⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, F = 1.0MHz$		850		pF
Output Capacitance	C_{oss}			101		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	Q_g	$V_{DS} = -15V, I_D = -4A, V_{GS} = -4.5V$		9.5		nC
Gate-source Charge	Q_{gs}			2		
Gate-drain Charge	Q_{gd}			3		
Switching Characteristics⁽⁴⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -15V, I_D = -4A$ $V_{GS} = -10V, R_{GEN} = 6\Omega$		7		ns
Turn-on rise Time	t_r			3		
Turn-off Delay Time	$t_{d(off)}$			20		
Turn-off Fall Time	t_f			12		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V_{SD}	$I_S = -1.0A, V_{GS} = 0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F = -10A, di/dt = 100A/\mu s$		35		ns

N-channel MOSFET ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$ unless otherwise noted)

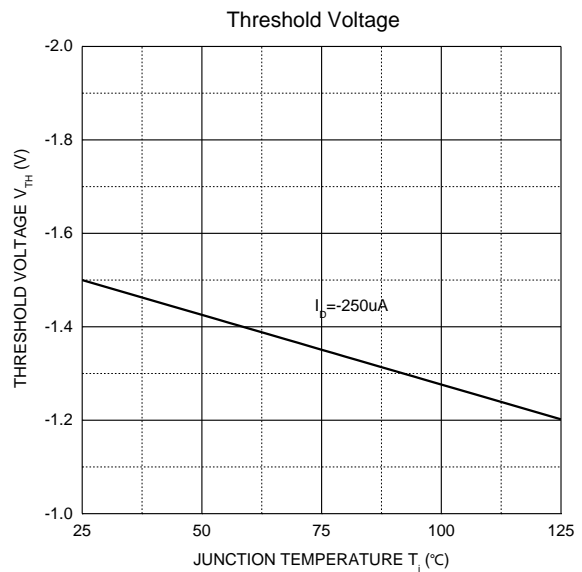
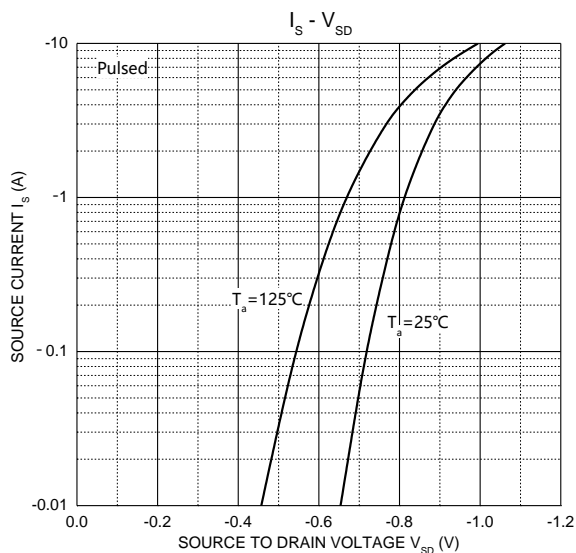
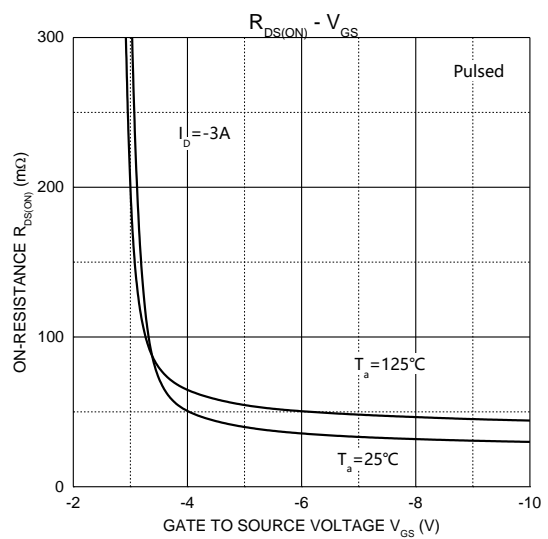
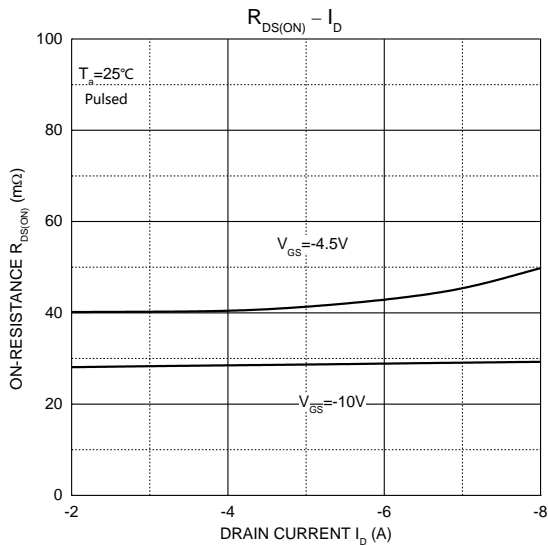
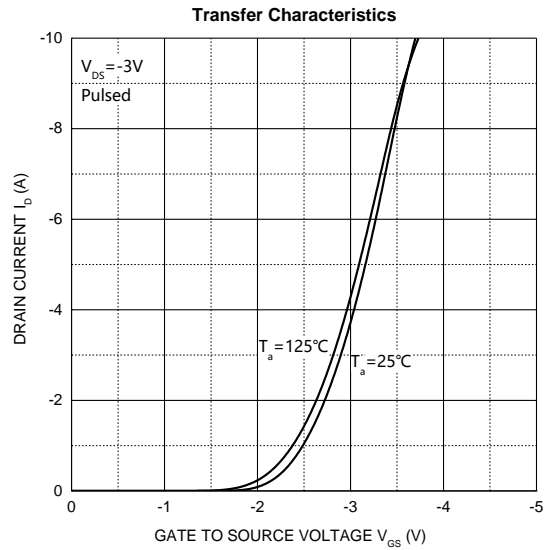
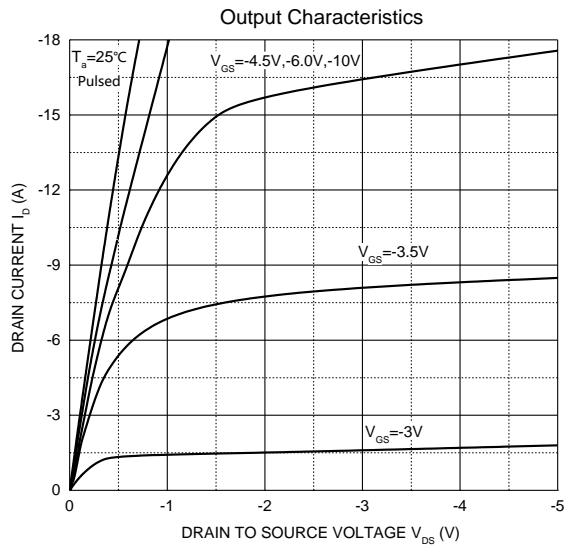
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1	μA
Gate-body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	2.5	V
Drain-source On-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 6.9A$		23	28	m Ω
		$V_{GS} = 4.5V, I_D = 5.0A$		30	42	
Forward Transconductance	g_{FS}	$V_{DS} = 5V, I_D = 6.9A$		6		S
Dynamic Characteristics⁽⁴⁾						
Input Capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V, F = 1.0MHz$		633		pF
Output Capacitance	C_{oss}			65		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	$V_{DS} = 15V, I_D = 5.8A, V_{GS} = 4.5V$		9.5		nC
Gate-source Charge	Q_{gs}			1.5		
Gate-drain Charge	Q_{gd}			3		
Switching Characteristics⁽⁴⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, R_L = 2.7\Omega$		3.3		ns
Turn-on Rise Time	t_r			4.8		
Turn-off Delay Time	$t_{d(off)}$	$V_{GS} = 10V, R_{GEN} = 3\Omega$		26		
Turn-off Fall Time	t_f			4		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁽³⁾	V_{SD}	$I_S = 1.0A, V_{GS} = 0V$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 4A, di/dt = 100A/\mu s$		17		ns

Notes:

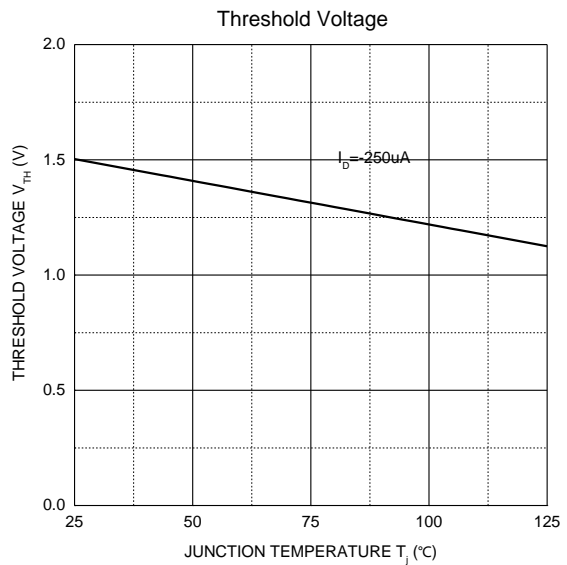
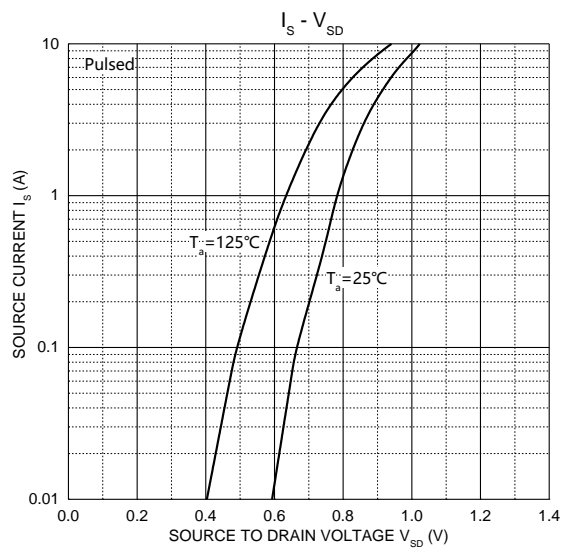
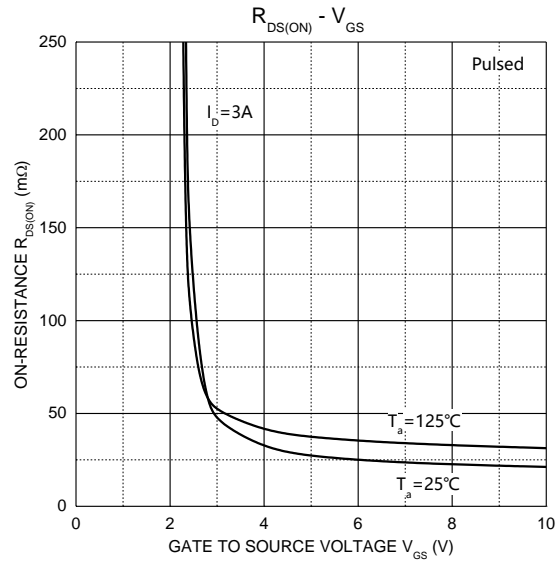
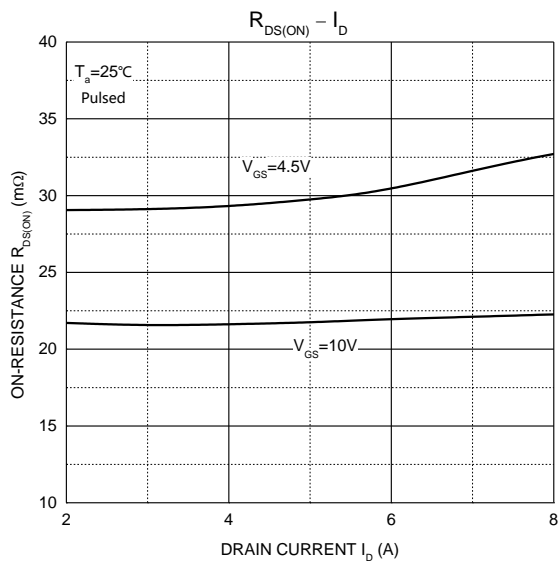
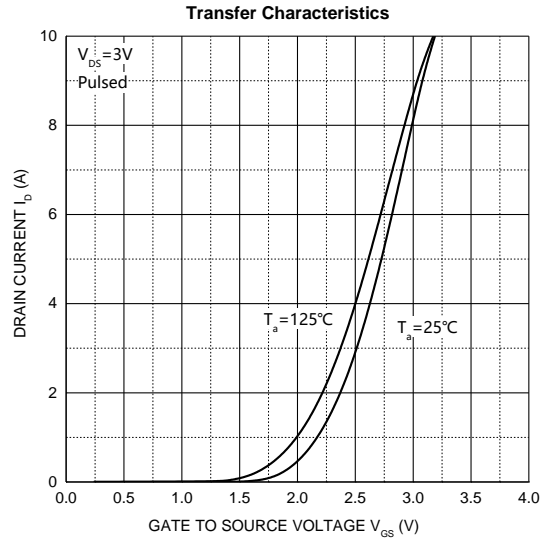
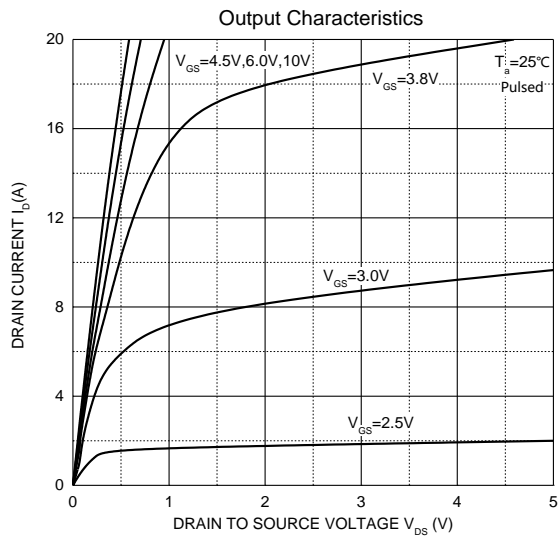
1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t < 5$ sec.
3. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

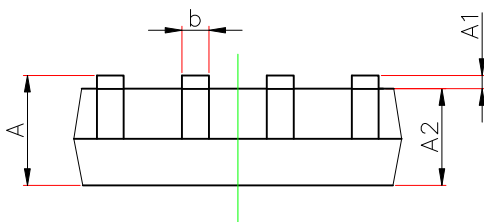
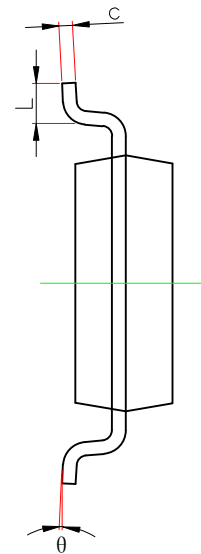
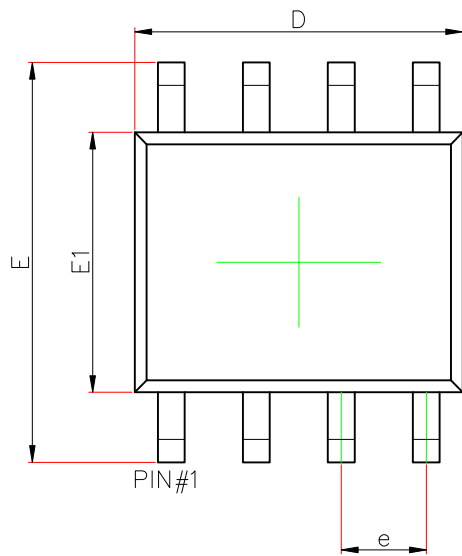
P-Channel MOS



N-Channel MOS



SOP8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	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	0.156	0.250	0.006	0.010
D	4.700	5.100	0.185	0.201
e	1.270(BSC)		0.050(BSC)	
E	5.800	6.200	0.228	0.244
E1	3.700	4.100	0.146	0.161
L	0.400	1.270	0.016	0.05
θ	0°	8°	0°	8°