

PW40NP37Q

40V N-Channel + P-Channel MOSFET

-7A -40V; $R_{DS(ON)typ}=39m\Omega@-4.5V$, $R_{DS(ON)typ}=31m\Omega@-10V$.
 9A40V; $R_{DS(ON)typ}=27m\Omega@4.5V$, $R_{DS(ON)typ}=16m\Omega@10V$.

FEATURE

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

Application

- Low voltage applications

MARKING:

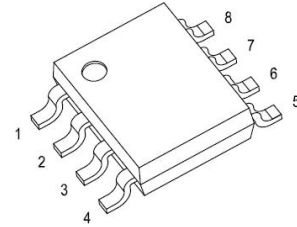


Q40NP37 = Device Code

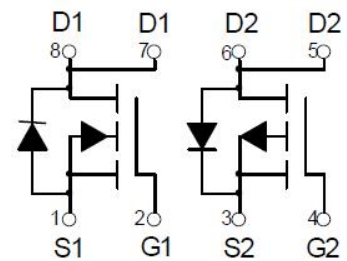
XX = Date Code

Solid dot = Green Device

SOP8



Schematic diagram



ABSOLUTE MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
P-MOSFET			
Drain-Source Voltage	V _{DS}	-40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ⁽¹⁾	I _D	-7	A
Pulsed Drain Current	I _{DM}	-21	A
Power Dissipation	P _D	1.4	W
N-MOSFET			
Drain-Source Voltage	V _{DS}	40	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	9	A
Pulsed Drain Current ⁽¹⁾	I _{DM}	27	A
Power Dissipation	P _D	1.4	W
Temperature and Thermal Resistance			
Thermal Resistance from Junction to Ambient ⁽²⁾	R _{θJA}	89	°C/W
Junction Temperature Range	T _J	150	°C
Storage Temperature	T _{STG}	-55~ +150	°C

P-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°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 = -250μA	-40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -32V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.5	-2.1	-3.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -5.0A		31	37	mΩ
		V _{GS} = -4.5V, I _D = -5.0A		39	47	
Forward tranconductance	g _{FS}	V _{DS} = -5V, I _D = -5.0A	5			S
Diode forward voltage ⁽³⁾	V _{DS}	I _S = -1.0A, V _{GS} = 0V			-1.2	V
DYNAMIC CHARACTERISTICS⁽⁴⁾						
Input Capacitance	C _{iss}	V _{DS} = -20V, 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} = -20V, I _D = -5A, 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} = -20V, I _D = -5A V _{GS} = -10V, R _{GEN} = 6Ω		7		nS
Turn-on rise time	t _r			3		
Turn-off delay time	t _{d(off)}			20		
Turn-off fall time	t _f			12		

N-channel MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

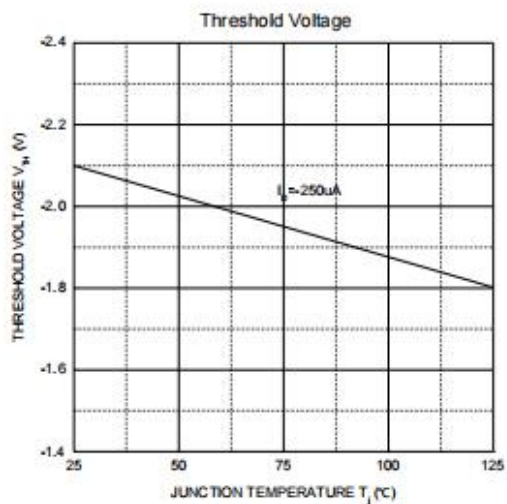
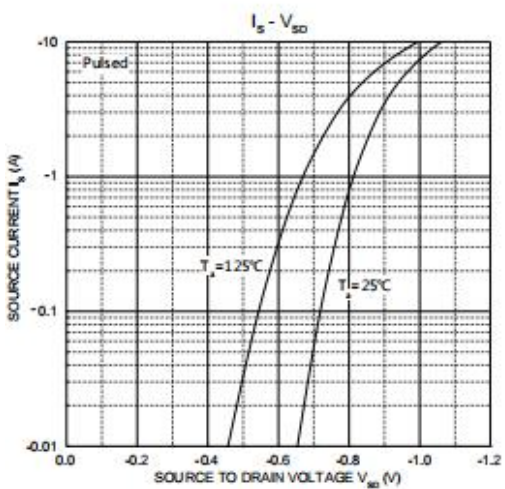
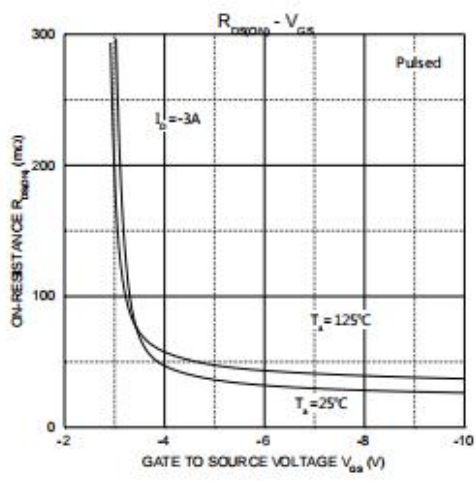
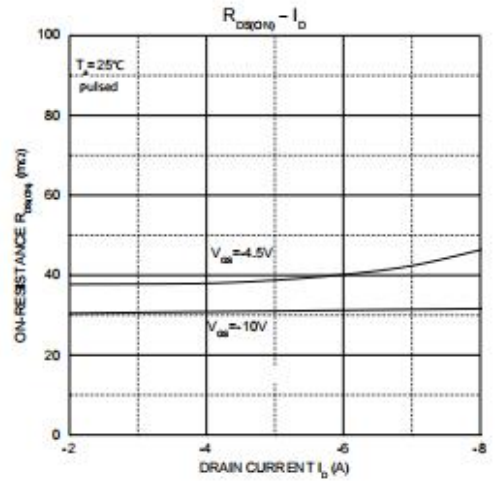
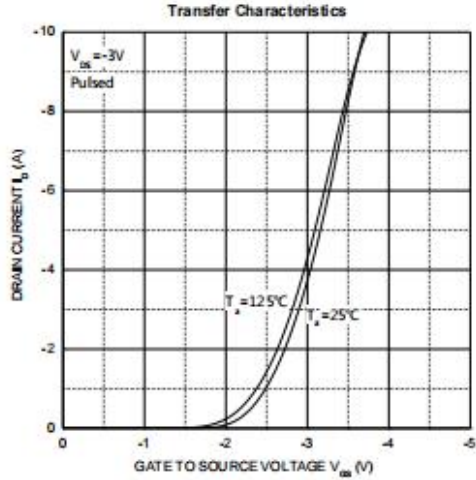
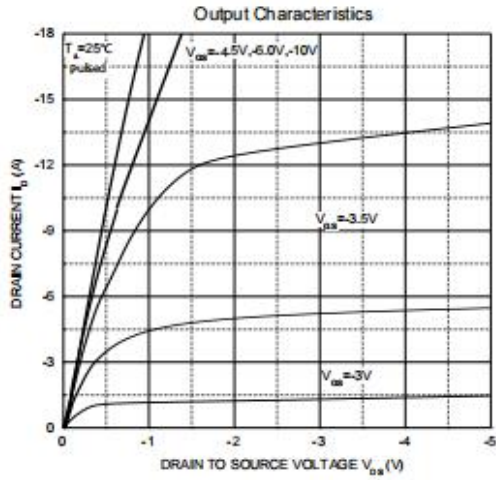
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.5	1.8	3.0	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 6.0A		16	21	mΩ
		V _{GS} = 4.5V, I _D = 6.0A		27	32	
Forward tranconductance	g _{FS}	V _{DS} = 5V, I _D = 6.0A	10			S
Diode forward voltage ⁽³⁾	V _{DS}	I _S = 1.0A, V _{GS} = 0V			1.2	V
DYNAMIC CHARACTERISTICS⁽⁴⁾						
Input Capacitance	C _{iss}	V _{DS} = 20V, 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} = 20V, I _D = 6.0A, 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} = 20V, R _L = 2.7Ω V _{GS} = 10V, R _{GEN} = 3Ω		3.3		nS
Turn-on rise time	t _r			4.8		
Turn-off delay time	t _{d(off)}			26		
Turn-off fall time	t _f			4		

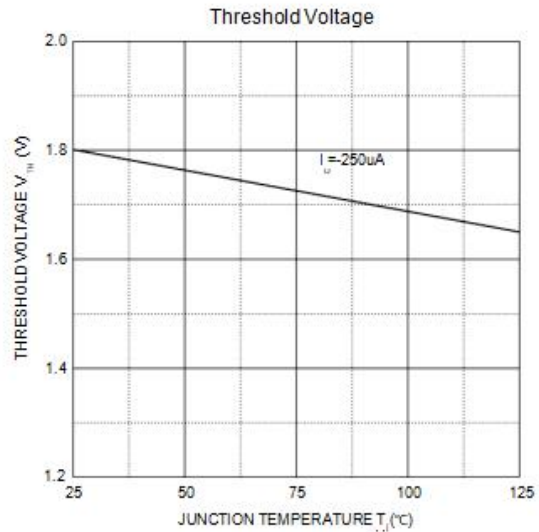
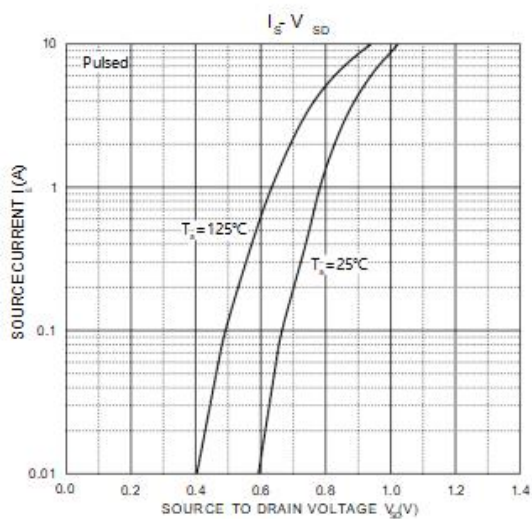
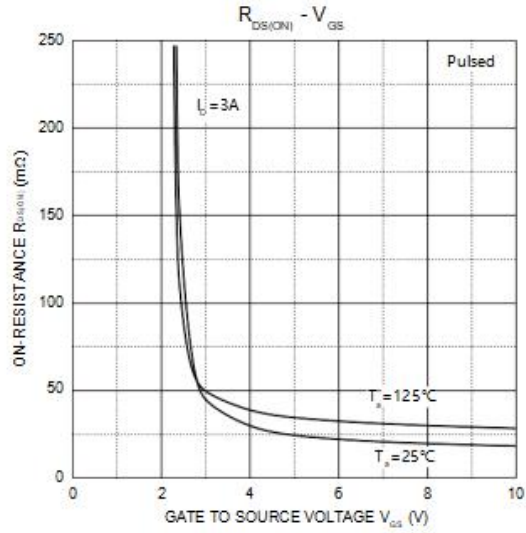
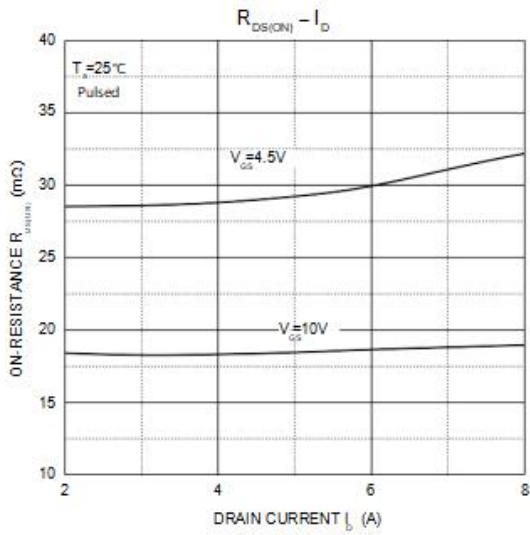
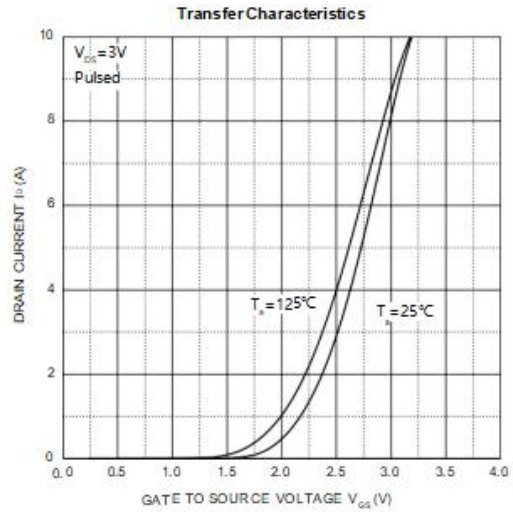
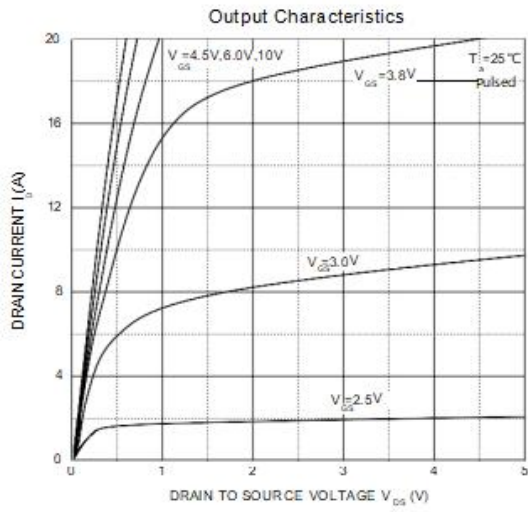
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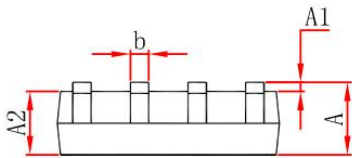
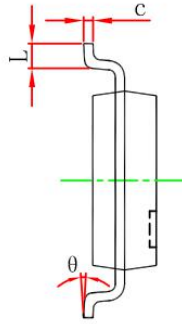
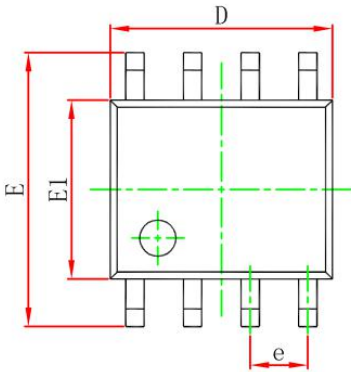
- 1.Repetitive Rating : Pulse width limited by maximum junction temperature.
- 2.Surface Mounted on FR4 Board, t < 5 sec.
- 3.Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- 4.Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

P-Channel MOS



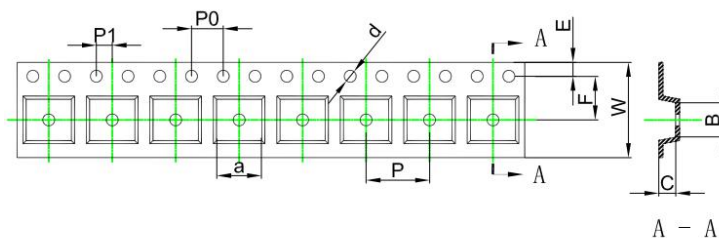




Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

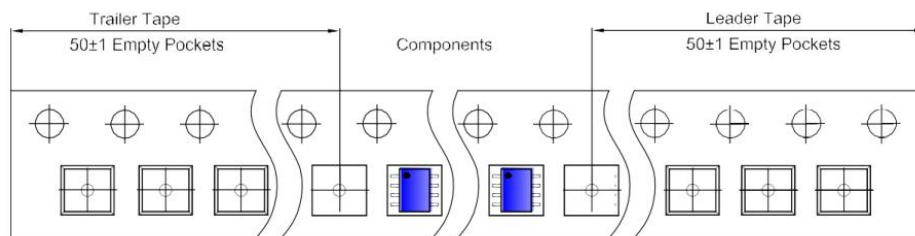
SOP8 Tape and Reel

SOP8 Embossed Carrier Tape

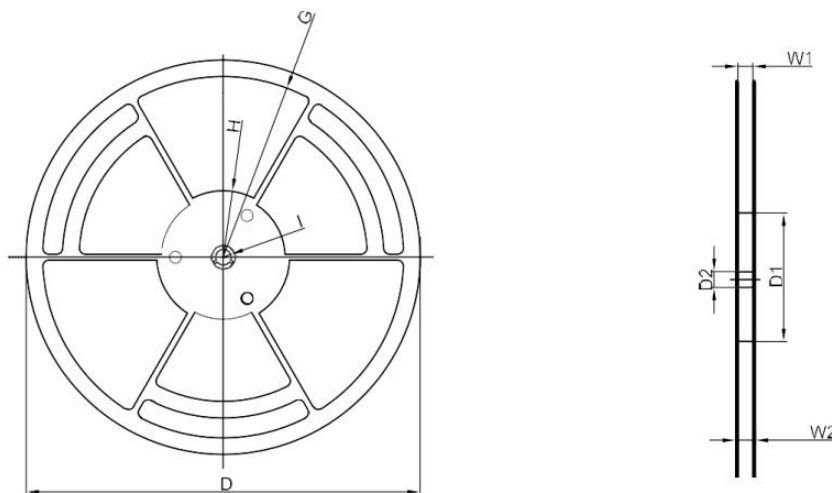


Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
SOP8	6.40	5.40	2.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOP8 Tape Leader and Trailer



SOP8 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13" Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
4,000 pcs	13 inch	8,000 pcs	360×360×65	64,000 pcs	565×380×390	