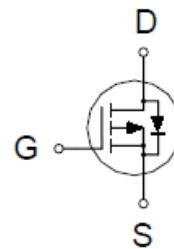
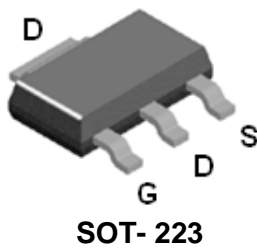


# P9006EL

## P-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-60V	90m $\Omega$ @ $V_{GS} = 10V$	-4A



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$T_A = 25\text{ }^\circ\text{C}$	$I_D$	-4	A
	$T_A = 100\text{ }^\circ\text{C}$		-2.7	
Pulsed Drain Current <sup>2</sup>		$I_{DM}$	-30	
Avalanche Current		$I_{AS}$	-24	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	30	mJ
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	$P_D$	3.125	W
	$T_A = 100\text{ }^\circ\text{C}$		1.25	
Operating Junction & Storage Temperature Range		$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

### THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		40	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		60	

<sup>1</sup>Limited by Package.

<sup>2</sup>Pulse width limited by maximum junction temperature.

# P9006EL

## P-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-60			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.0	-1.7	-3.0	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -48V, V <sub>GS</sub> = 0V			-1	μA
		V <sub>DS</sub> = -40V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125 °C			-10	
On-State Drain Current <sup>1</sup>	I <sub>D(ON)</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 10A	-30			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A		82	135	mΩ
		V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A		72	90	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A		15		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = -25V, f = 1MHz		1130		pF
Output Capacitance	C <sub>oss</sub>			130		
Reverse Transfer Capacitance	C <sub>rss</sub>			79		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		4.75		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , I <sub>D</sub> = -4A, V <sub>GS</sub> = -10V		18		nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			6		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			4		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = -30V, I <sub>D</sub> ≅ -4A, V <sub>GS</sub> = -10V, R <sub>GS</sub> = 2.5Ω		10		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			15		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			27		
Fall Time <sup>2</sup>	t <sub>f</sub>			17		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				-2.4	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = -4A, V <sub>GS</sub> = 0V			-1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -4A, dI/dt = 100A / μS		72		nS
Reverse Recovery Charge	Q <sub>rr</sub>				127	

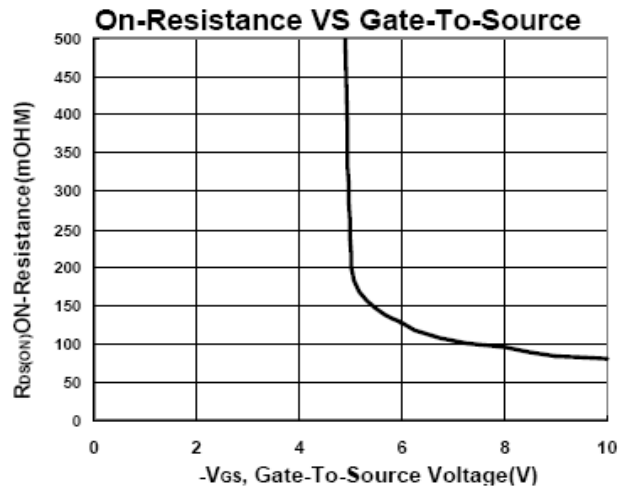
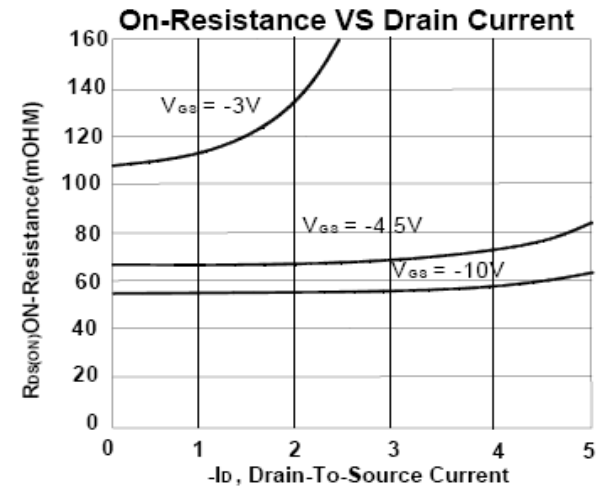
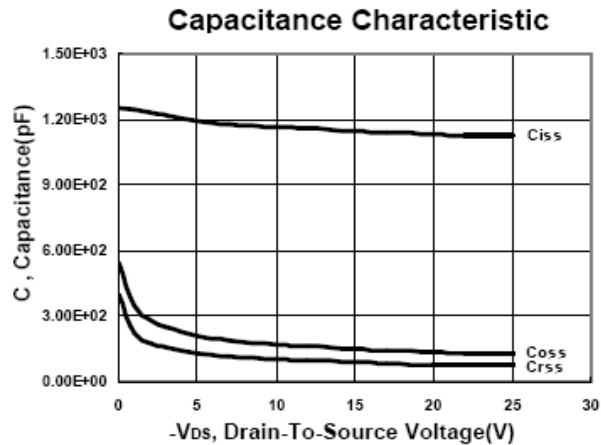
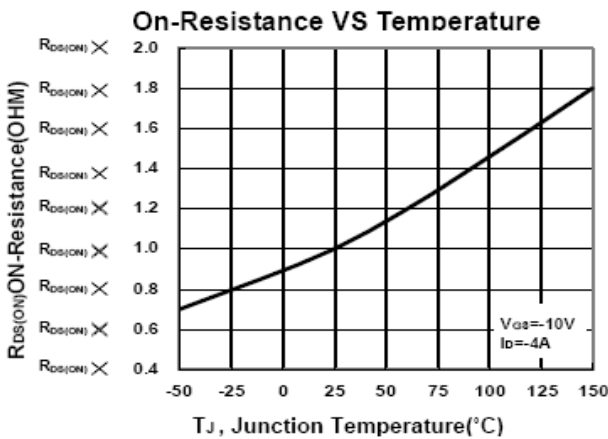
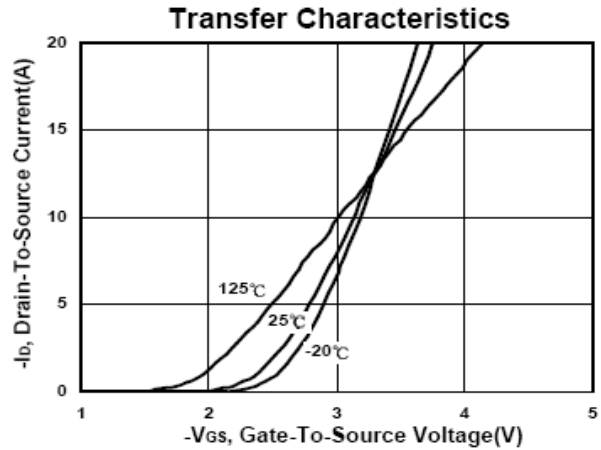
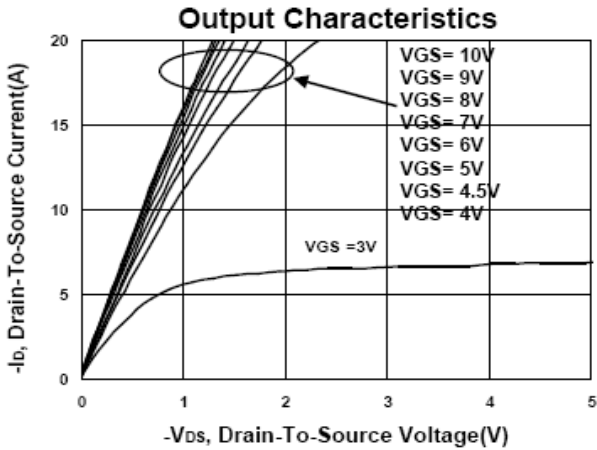
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

# P9006EL

## P-Channel Enhancement Mode MOSFET

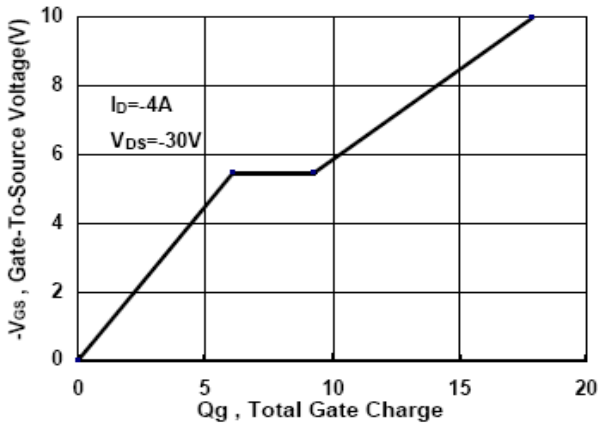
### TYPICAL PERFORMANCE CHARACTERISTICS P-CHANNEL



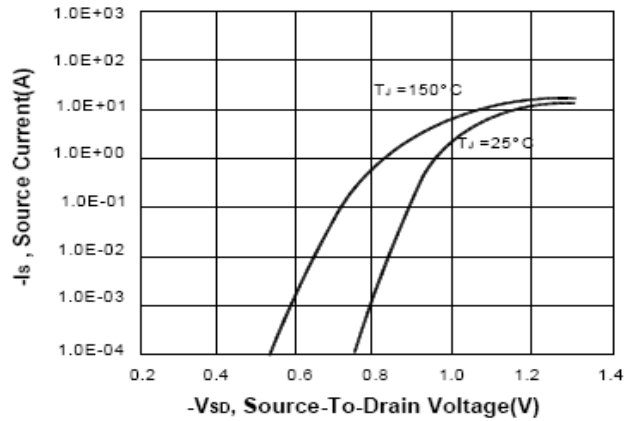
# P9006EL

## P-Channel Enhancement Mode MOSFET

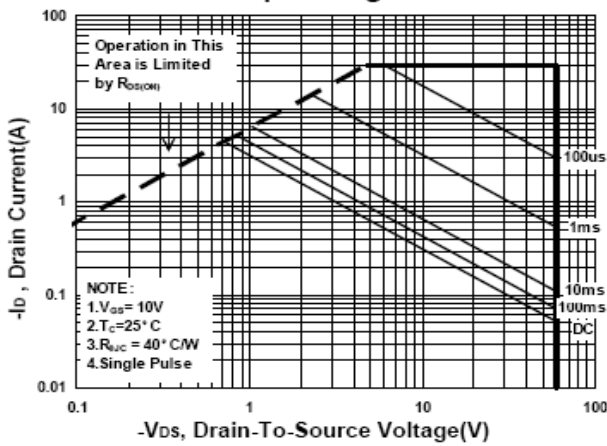
**Gate charge Characteristics**



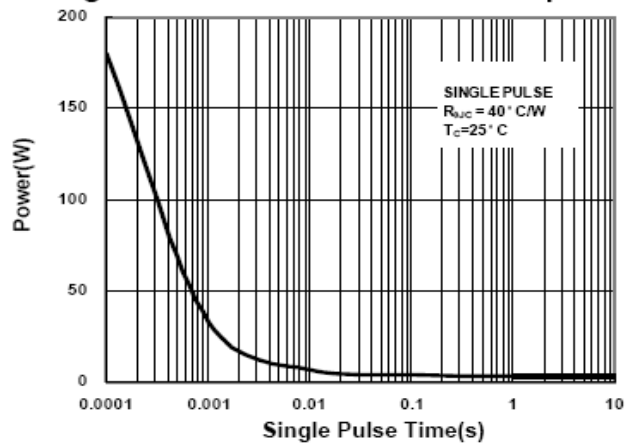
**Source-Drain Diode Forward Voltage**



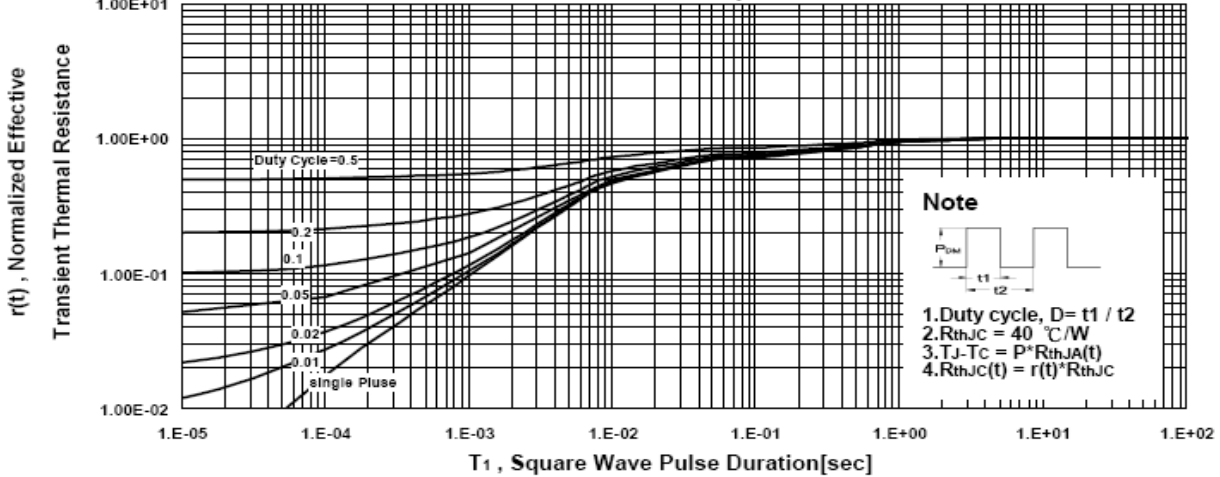
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



**P9006EL**  
**P-Channel Enhancement Mode MOSFET**

**SOT-223 MECHANICAL DATA**

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.60	0.76	0.84	H	3.30	3.50	3.70
B	6.70	7.00	7.30	I	0.50	1.00	1.20
C	2.85	3.00	3.10	J	0.23	0.3	0.4
D	2.25	2.30	2.35	K	0°		10°
E	4.35	4.60	4.85	L	0	0.1	0.2
F	1.40	1.60	1.80	M			
G	6.30	6.50	6.80	N			

