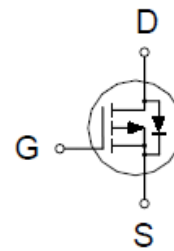
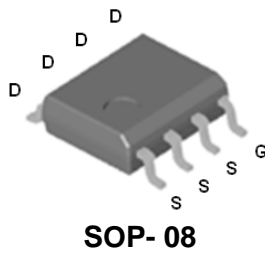


# P7004EV

## P-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-40V	70m $\Omega$ @ $V_{GS} = -10V$	-4A



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	-40	V
Gate-Source Voltage		$V_{GS}$	$\pm 20$	
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	$I_D$	-4	A
	$T_A = 70\text{ }^\circ\text{C}$		-3.2	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	-20	
Avalanche Current		$I_{AS}$	-19	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	18	mJ
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	$P_D$	1.9	W
	$T_A = 70\text{ }^\circ\text{C}$		1.2	
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-Ambient	$R_{\theta JA}$		69	$^\circ\text{C} / \text{W}$

<sup>1</sup>Pulse width limited by maximum junction temperature.

# P7004EV

## P-Channel Enhancement Mode MOSFET

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

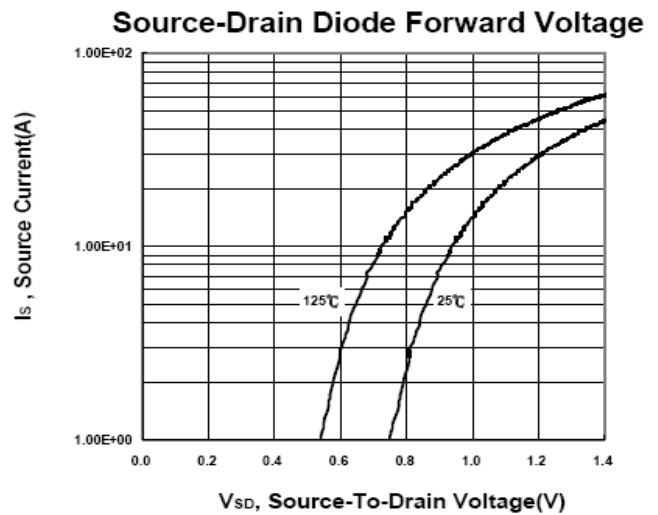
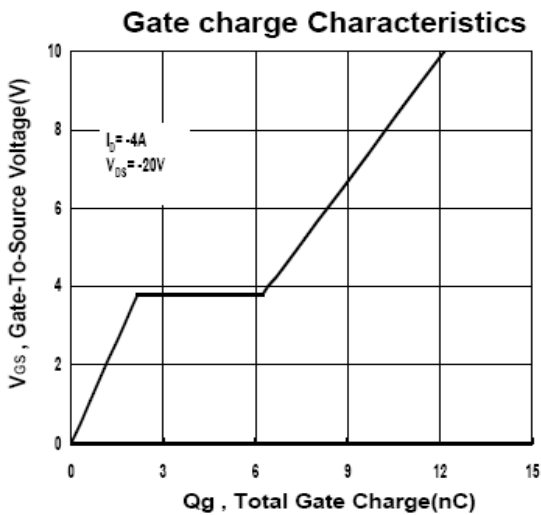
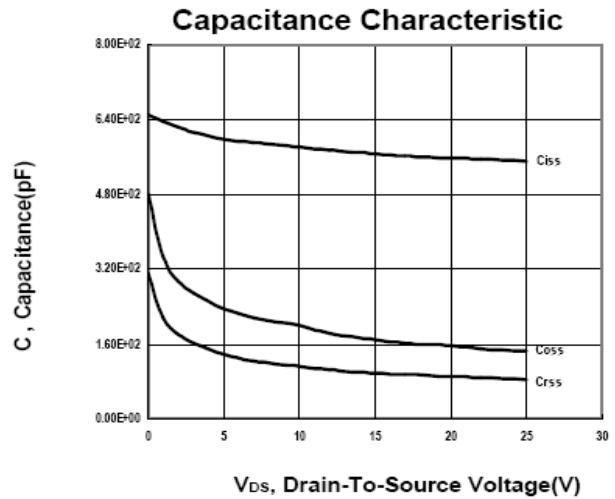
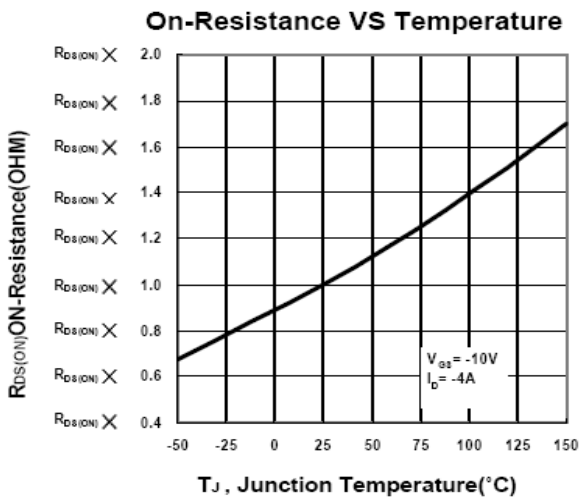
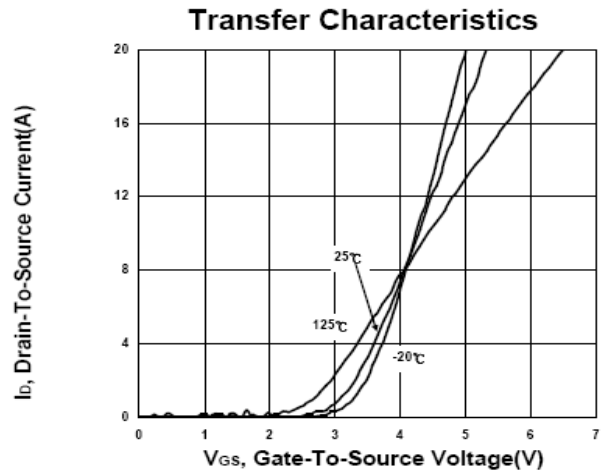
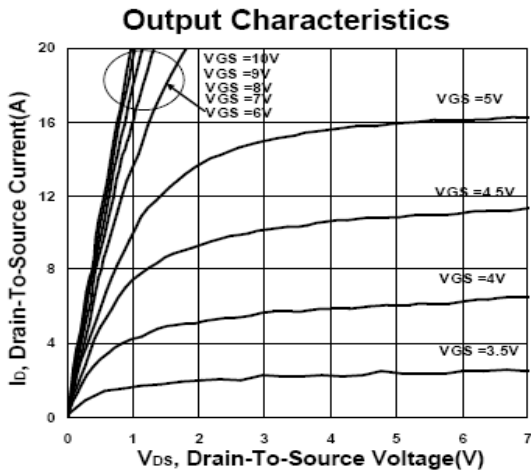
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-40			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1.5	-2	-2.5	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> = -32V, V <sub>GS</sub> = 0V			-1	μA
		V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 70 °C			-10	
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A		43	70	mΩ
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -4A		28		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = -20V, f = 1MHz		556		pF
Output Capacitance	C <sub>oss</sub>			146		
Reverse Transfer Capacitance	C <sub>rss</sub>			87		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, f = 1MHz		8.6		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A		12		nC
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			2.3		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			4.4		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = -20V, I <sub>D</sub> ≅ -1A, V <sub>GS</sub> = -10V, R <sub>GS</sub> = 6Ω		12		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			10		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			44		
Fall Time <sup>2</sup>	t <sub>f</sub>			8		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				-1.4	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 <sub>F</sub> /dt = 100A / μS		15		nS
Reverse Recovery Charge	Q <sub>rr</sub>				7	

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

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

# P7004EV

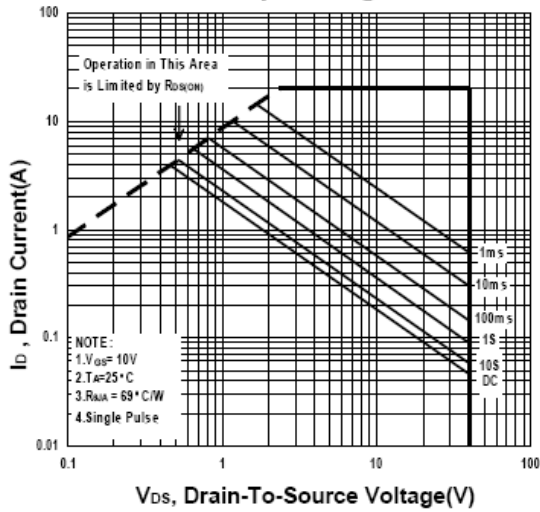
## P-Channel Enhancement Mode MOSFET



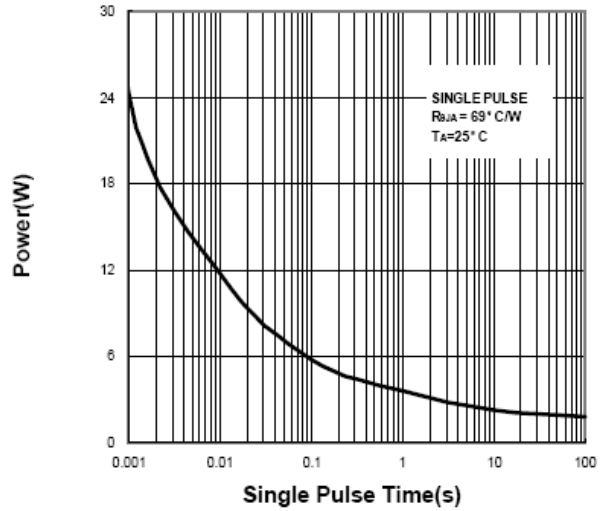
# P7004EV

## P-Channel Enhancement Mode MOSFET

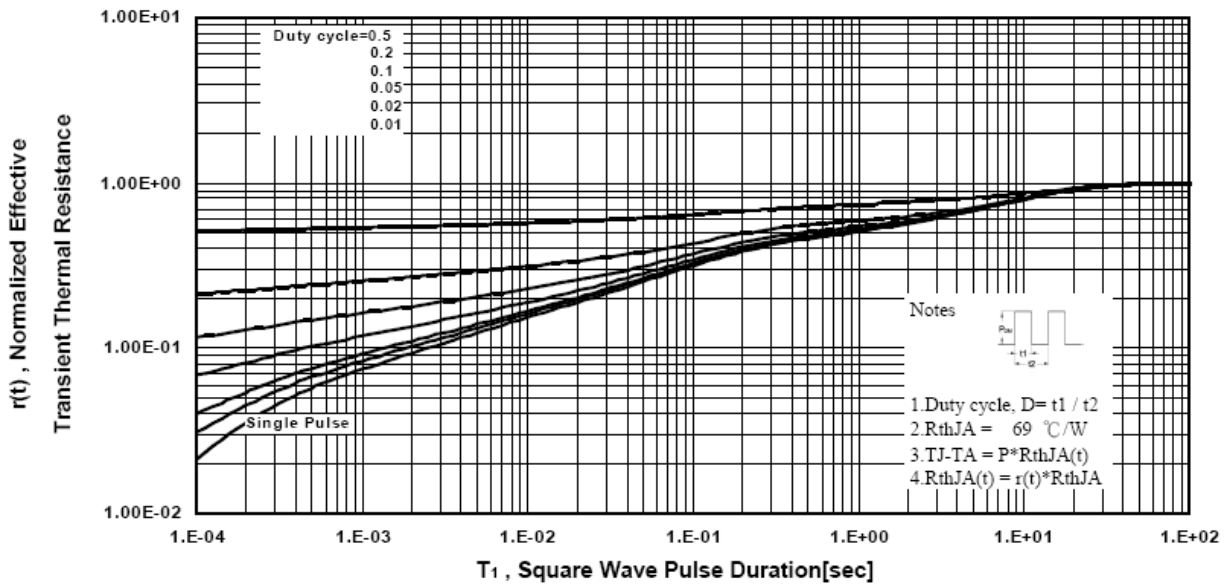
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



# P7004EV

## P-Channel Enhancement Mode MOSFET

### Package Dimension

### SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.4	0.6	0.93
B	3.8	3.9	4.0	I	0.19	0.21	0.25
C	5.79	6.0	6.2	J	0.25	0.375	0.5
D	0.33	0.4	0.51	K	0°	3°	18°
E	1.25	1.27	1.29				
F	1.1	1.3	1.65				
G	0.05	0.15	0.25				

