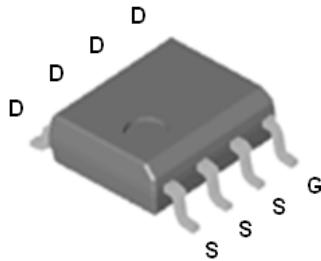


# P0903BV

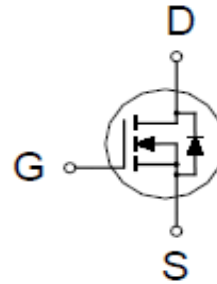
## N-Channel Logic Level Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
30V	9.65m $\Omega$ @ $V_{GS} = 10V$	13A



SOP-8



### 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	$I_D$	$T_A = 25\text{ }^\circ\text{C}$	13
		$T_A = 100\text{ }^\circ\text{C}$	8
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	50	A
Avalanche Current	$I_{AS}$	32	
Avalanche Energy	$E_{AS}$	51	mJ
Power Dissipation	$P_D$	$T_A = 25\text{ }^\circ\text{C}$	2.5
		$T_A = 100\text{ }^\circ\text{C}$	1
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	$R_{\theta JA}$		50	$^\circ\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		25	

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

# P0903BV

## N-Channel Logic Level Enhancement Mode MOSFET

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			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	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1	1.9	2.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±25V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, T <sub>C</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> = 10V	50			A
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 11A		14.2	14.5	mΩ
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 13A		9.3	9.65	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 13A		40		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		1190		pF
Output Capacitance	C <sub>oss</sub>			285		
Reverse Transfer Capacitance	C <sub>rss</sub>			170		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, f = 1MHz		1.56		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g</sub> (V <sub>GS</sub> =10V)	V <sub>DS</sub> = 0.5V <sub>(BR)DSS</sub> , I <sub>D</sub> = 30A		23		nC
	Q <sub>g</sub> (V <sub>GS</sub> =4.5V)			11		
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub> (V <sub>GS</sub> =10V)			5.2		
	Q <sub>gs</sub> (V <sub>GS</sub> =4.5V)			4.5		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub> (V <sub>GS</sub> =10V)			5.6		
	Q <sub>gd</sub> (V <sub>GS</sub> =4.5V)			5		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> = 15V, R <sub>L</sub> = 1.5Ω, I <sub>D</sub> ≅ 20A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = 6Ω		10		nS
Rise Time <sup>2</sup>	t <sub>r</sub>			6		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			32		
Fall Time <sup>2</sup>	t <sub>f</sub>			7		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>A</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				2.5	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0V			1	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 20A, dI <sub>F</sub> /dt = 100A / μS		15		nS
Reverse Recovery Charge	Q <sub>rr</sub>			32		nC

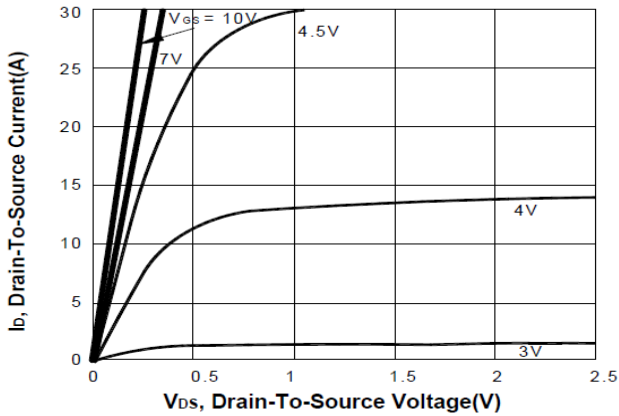
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

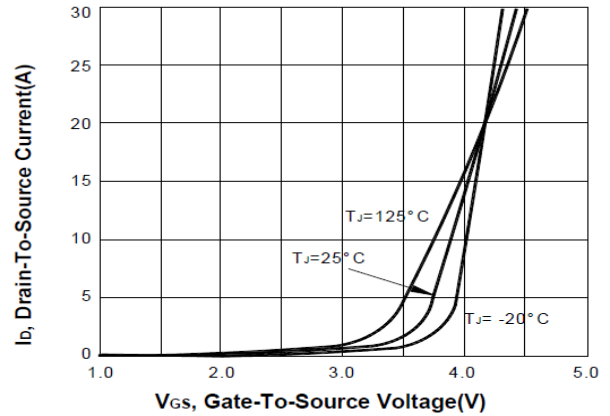
# P0903BV

## N-Channel Logic Level Enhancement Mode MOSFET

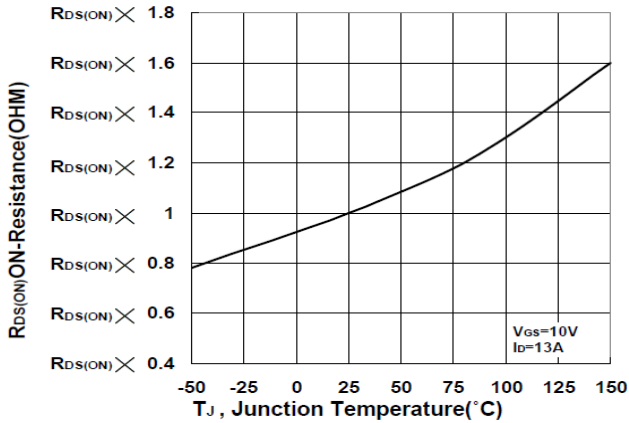
**Output Characteristics**



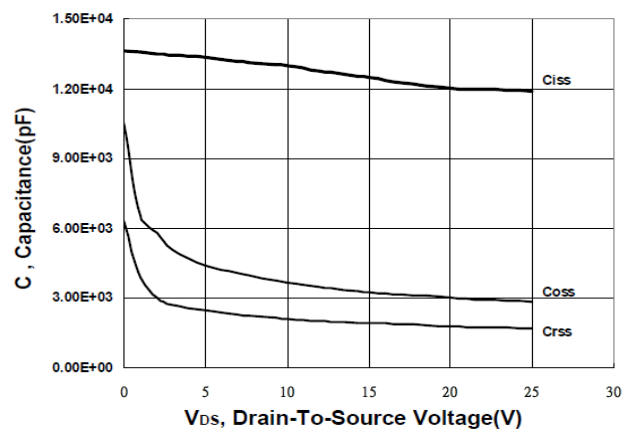
**Transfer Characteristics**



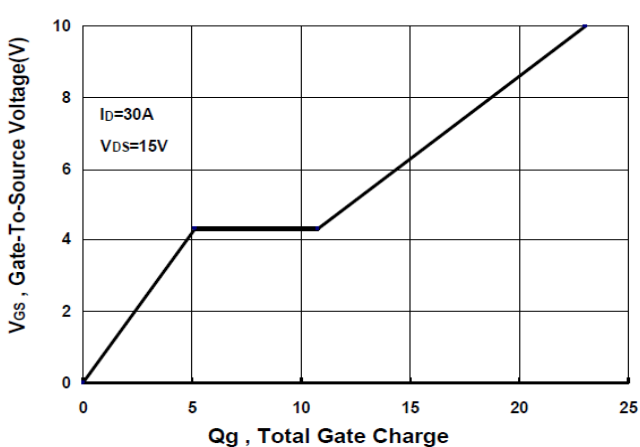
**On-Resistance VS Temperature**



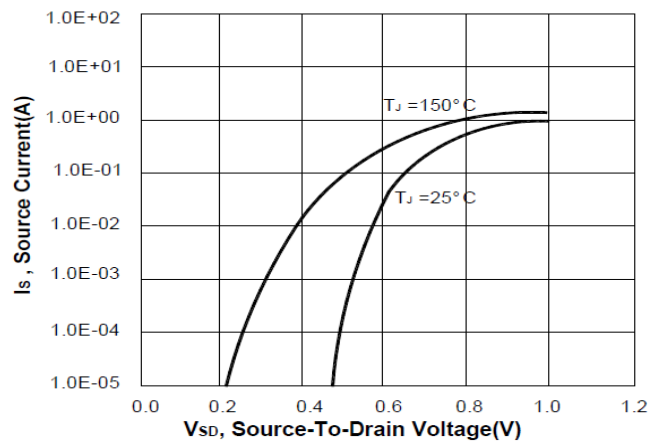
**Capacitance Characteristic**



**Gate charge Characteristics**



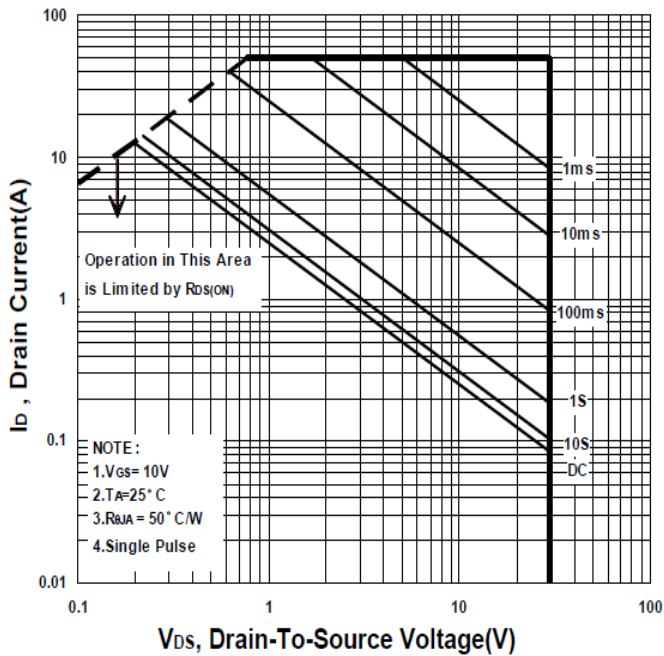
**Source-Drain Diode Forward Voltage**



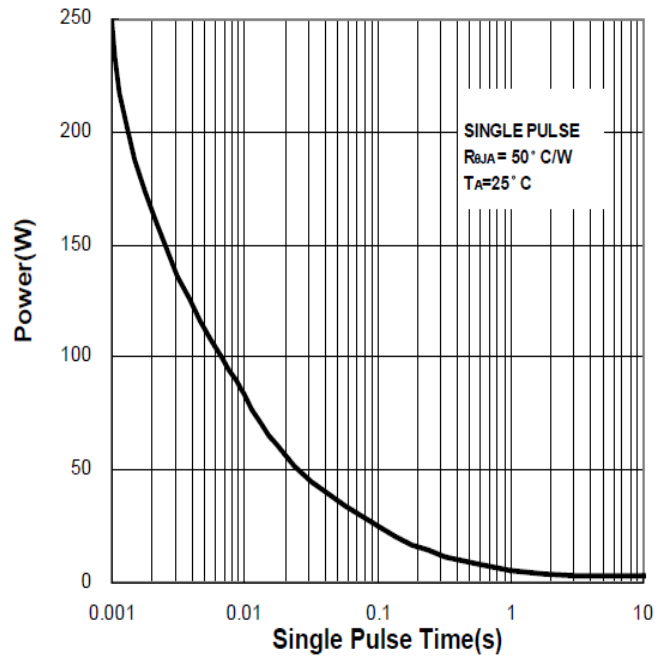
# P0903BV

## N-Channel Logic Level Enhancement Mode MOSFET

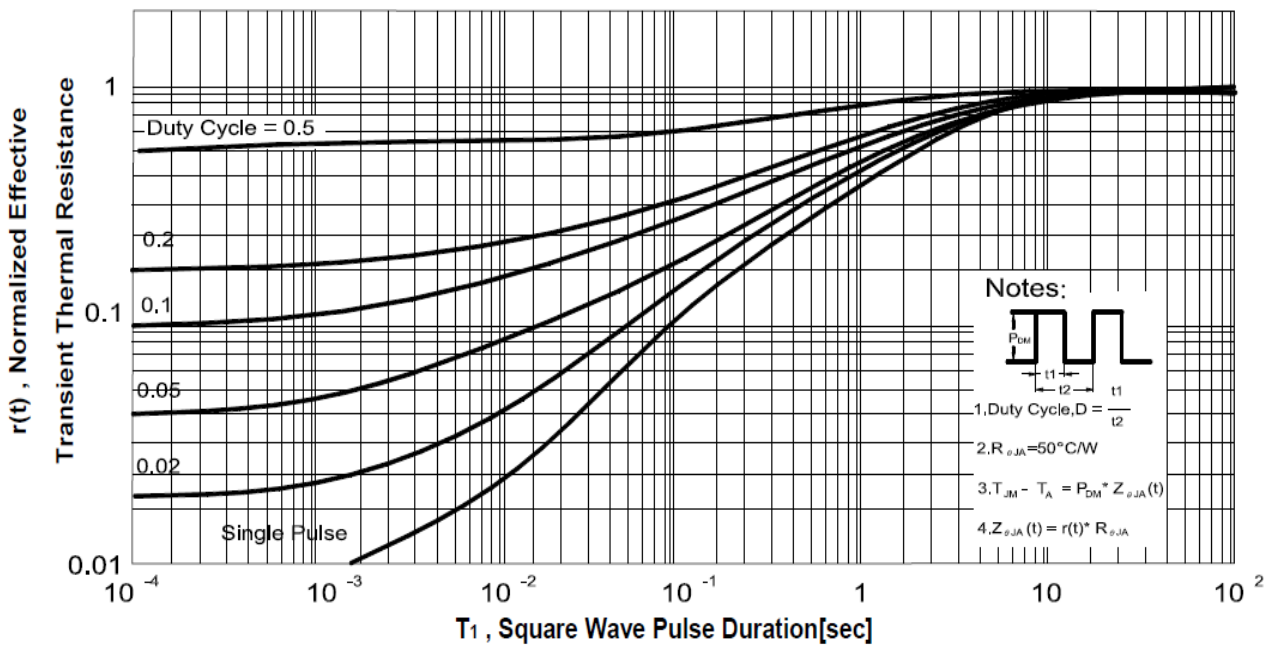
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



# P0903BV

## N-Channel Logic Level 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				

