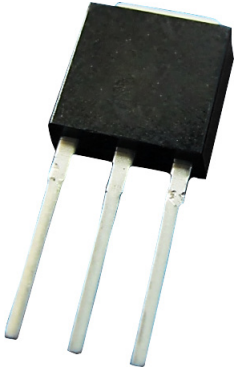


# N-Channel Enhancement Mode MOSFET

## 600Vds, 2A Id, TO-251

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**RoHS  
Compliant**

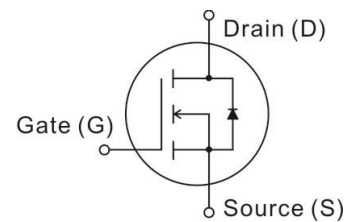


### Features

- Low ON Resistance
- Fast Switching
- Low Gate Charge & Low

### Mechanical Data

- Case: TO-251
- Device Weight : 0.012 ounces (0.347grams)



### Maximum Ratings And Electrical Characteristics

Characteristics	Symbol	Values	Unit
Drain to Source Voltage	$V_{DS}$	600	V
Gate to Source Voltage	$V_{GS}$	$\pm 30$	
Continuous Drain Current, $T_c = 25^\circ\text{C}$	$I_D$	2	A
Pulse Drain Current (Note1)	$I_{DM}$	8	
Maximum Power Dissipation, $T_c = 25^\circ\text{C}$	$P_D$	52	W
Single Pulsed Avalanche Energy $I_{AS} = 1.5\text{A}, V_{DD} = 120\text{V}, L = 60\text{mH}$	$E_{AS}$	67.5	mJ
Operating Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

### Thermal Characteristics (TA = 25 °C unless otherwise noted)

Parameter	Symbol	Values	UNIT
		Typ.	
Thermal Resistance (Note2)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance (Note3)		2.4	

### Notes:

1. Maximum DC current limited by the package
2. Thermal resistance junction to ambient.
3. Thermal resistance junction to case.

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# N-Channel Enhancement Mode MOSFET

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### Electrical Characteristics

Static Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Drain to Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 0.25mA	600	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 0.25mA	2	3.2	4	
Drain to Source On State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1A, T <sub>J</sub> = 25°C	-	3	4	Ω
Drain to Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> = 600V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C	-	0.05	1	μA
		V <sub>DS</sub> = 600V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C			10	
Gate to Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±30V, V <sub>DS</sub> = 0V	-	-	100	nA

Dynamic Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate to Source Charge	Q <sub>GS</sub>	V <sub>DS</sub> = 480V, I <sub>D</sub> = 2A, V <sub>GS</sub> = 10V	-	1.5	-	nC
Gate to Drain Charge	Q <sub>gd</sub>			4.6		
Total Gate Charge	Q <sub>g</sub>			8.9		
Gate Plateau Voltage	V(Plateau)			5.33		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 300V, I <sub>D</sub> = 2A V <sub>GS</sub> = 10V, R <sub>G</sub> = 25Ω	-	6.2	-	nS
Turn-On Rise Time	t <sub>r</sub>			21.2		
Turn-Off Delay Time	t <sub>d(off)</sub>			17.6		
Turn-Off Fall Time	t <sub>f</sub>			22.6		
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, f = 1MHz	-	287	-	pF
Output Capacitance	C <sub>oss</sub>			37		
Reverse Transfer Capacitance	C <sub>rss</sub>			7		
Gate Input Resistance	R <sub>G</sub>			2.86		
		V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f = 1MHz				Ω

Source-Drain Diode Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Maximum Diode Forward Current	I <sub>S</sub>	-	-	-	2	A
Maximum Pulsed Source Current	I <sub>SM</sub>	-			8	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 2A, V <sub>GS</sub> = 0V			-	-
Reverse Recovery Time	t <sub>RR</sub>	I <sub>SD</sub> =2A, di/dt=100A/μS V <sub>DD</sub> =100V, T <sub>J</sub> =25C	-	153	-	nS
Reverse Recovery Charge	Q <sub>RR</sub>			0.89		μC

**Note:** Pulse test with 300us pulse width, 2% duty cycle.

# N-Channel Enhancement Mode MOSFET

## 600Vds, 2A Id, TO-251



### Typical Characteristics Curves (TC=25°C, unless otherwise noted)

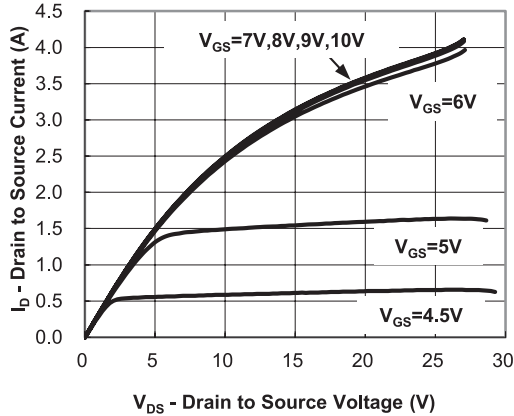


Figure 1. Output Characteristic

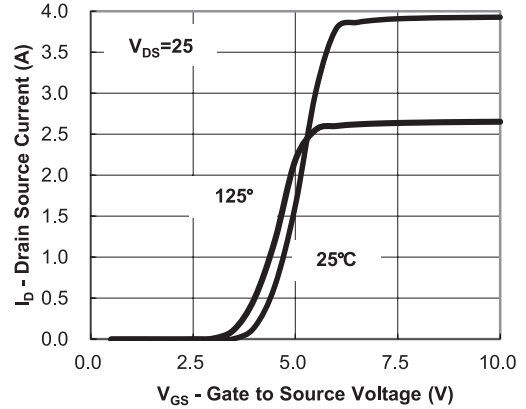


Figure 2. Transfer Characteristic

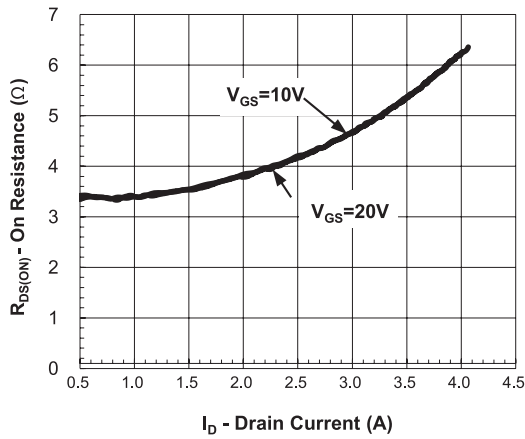


Figure 3. On-Resistance v.s Drain Current

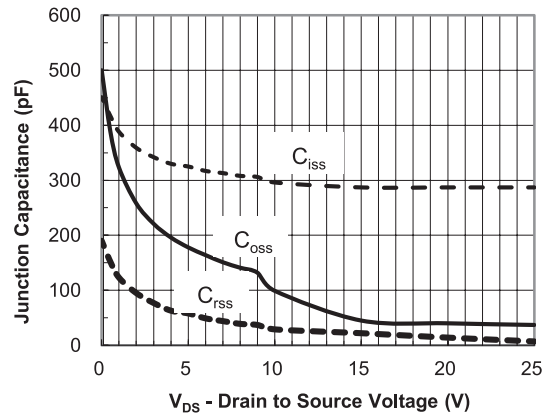


Figure 4. Capacitance Characteristic

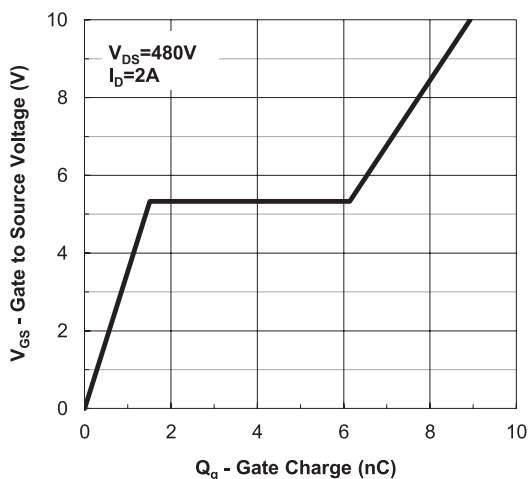


Figure 5. Gate Charge Characteristics

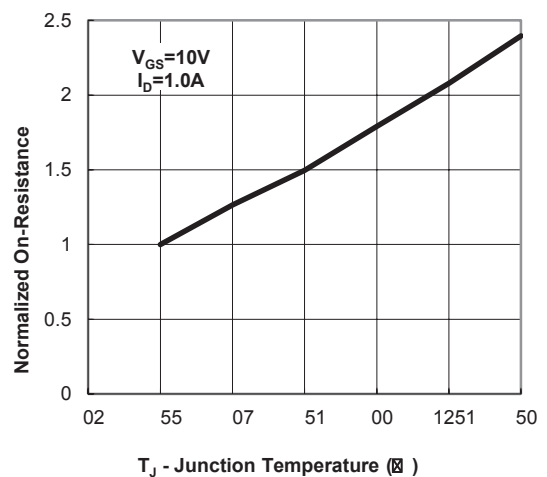


Figure 6. On-Resistance v.s Junction Temperature



# N-Channel Enhancement Mode MOSFET

## 600Vds, 2A Id, TO-251

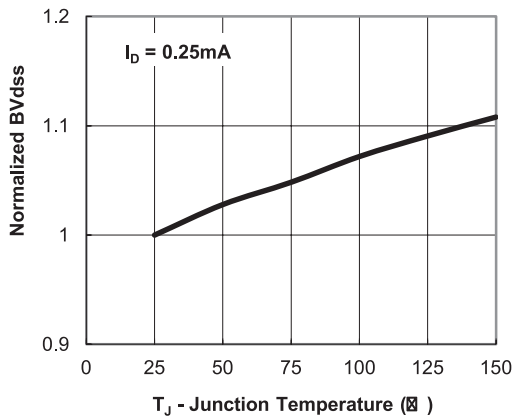


Figure 7. Breakdown Voltage v.s Junction

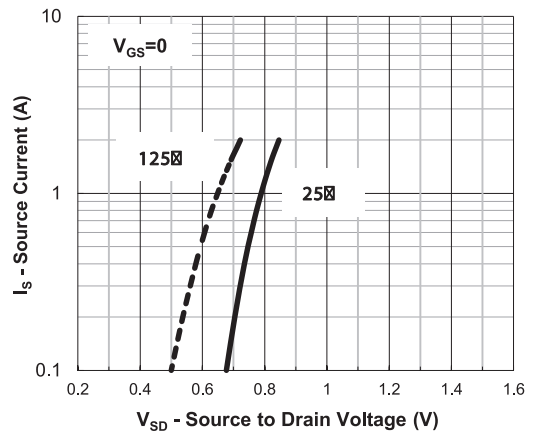


Figure 8. Body Diode Forward Voltage Characteristic

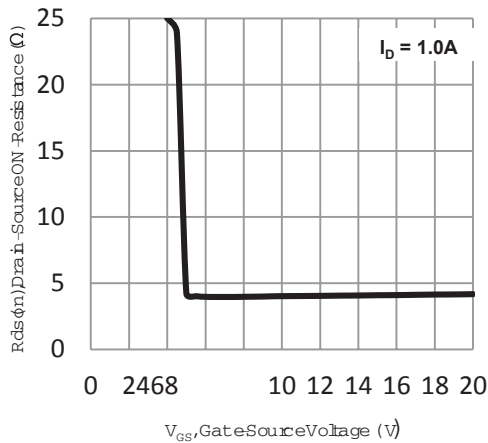


Figure 9. Typical Transfer

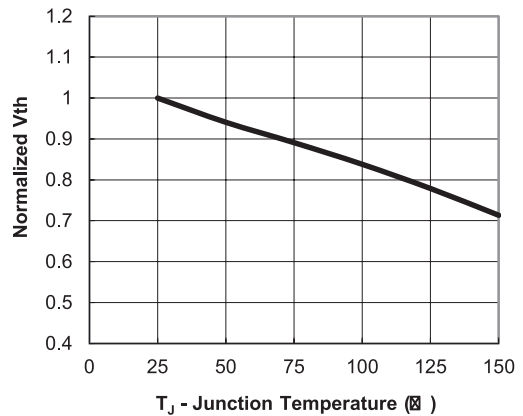


Figure 10. Threshold voltage v.s Junction

### Part Number Table

Description	Part Number
Mosfet, N-Channel, 600 Vds, 2A Id, TO-251	MP002929

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