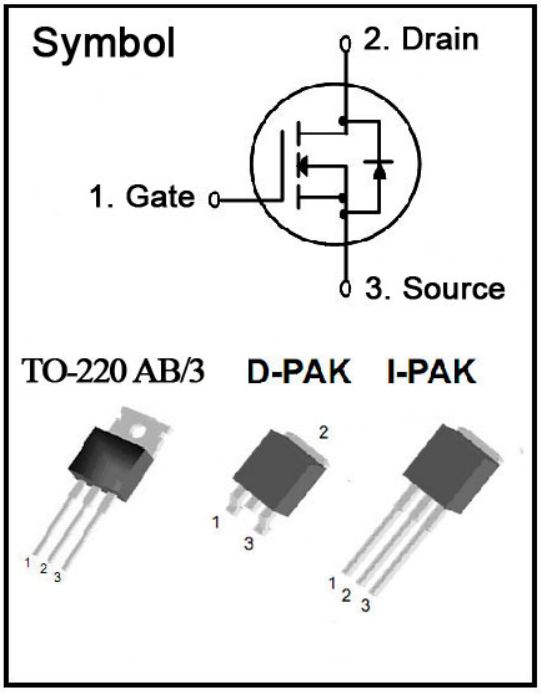
N-Channel MOSFET

Features

- $R_{DS(on)}$ (Max 5.0 Ω)@V_{GS}=10 V
- Gate Charge (Typical 9.5 nC)
- Maximum Junction Temperature Range (150 °C)



Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{DSS}	Drain to Source Voltage	600	V
I_D	Continuous Drain Current(@T_C = 25 °C)	1.8	A
	Continuous Drain Current(@T_C = 100 °C)	1.1	A
I_{DM}	Drain Current Pulsed	6.0 [1)]	A
V_{GS}	Gate to Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy	120 [2)]	mJ
E_{AR}	Repetitive Avalanche Energy	4.4 [1)]	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5 [3)]	V/ns
P_D	Total Power Dissipation(@T_C = 25 °C)	44	W
	Derating Factor above 25 °C	0.35	W/°C
T_{STG}	Operating Junction Temperature	-55 ~ 150	°C
T_J	Storage Temperature	150	°C

Notes

[1)] Repeativity rating : pulse width limited by junction temperature

[2)] L = 68 mH, I_{AS} =1.8 A, V_{DD} = 50 V, R_G = 25 Ω , Starting T_J = 25 °C

[3)] I_{SD} ≤ 2.0 A, di/dt ≤ 200 A/us, V_{DD} ≤ BV_{DSS}, Starting T_J = 25 °C

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	-	-	0.85[1)]	°C/W
		-	-	2.87	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	0.5[1)]	-	°C/W
		-	-	50	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	-	62.5[1)]	°C/W
		-	-	110	
[1)] For package TO-220 AB/3					

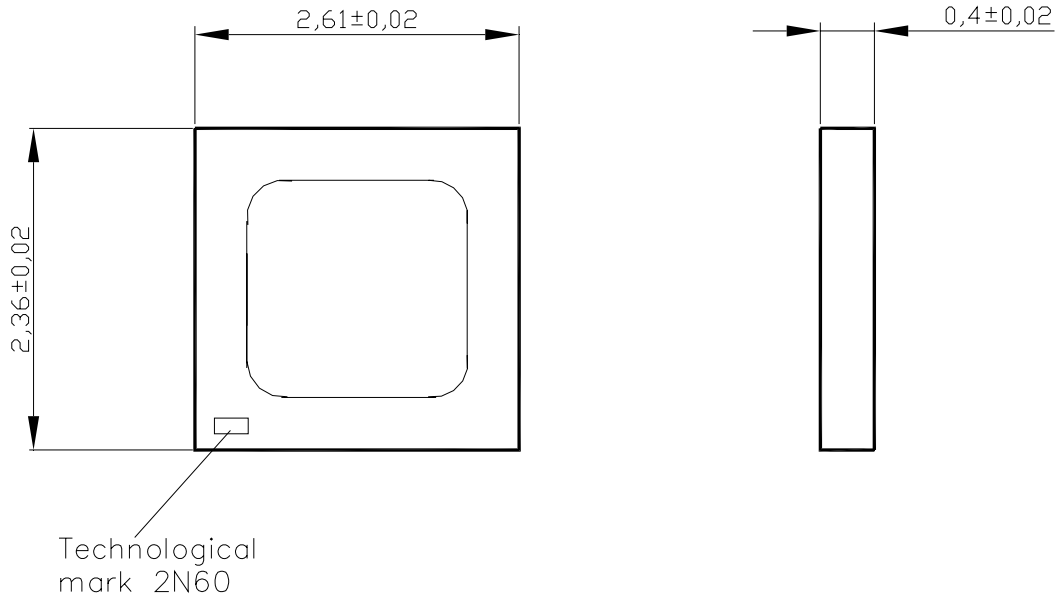
Source-Drain Diode Characteristics and Maximum Ratings

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
I_S	Maximum Continuous Source-Drain Diode Forward Current		-	-	1.8	A
I_{SM}	Maximum Pulsed Source-Drain Diode Forward Current		-	-	6.0	
V_{SD}	Diode Forward Voltage	I_S = 1.8 A, V_{GS} = 0 V	-	-	1.4	V
t_{rr}	Reverse Recovery Time	I_S = 2.0 A, V_{GS} = 0 V, dIF/dt = 100 A/us $t_i \leq$ 300 us; Q > 50	-	230	-	ns
Q_{rr}	Reverse Recovery Charge		-	1.0	-	uC

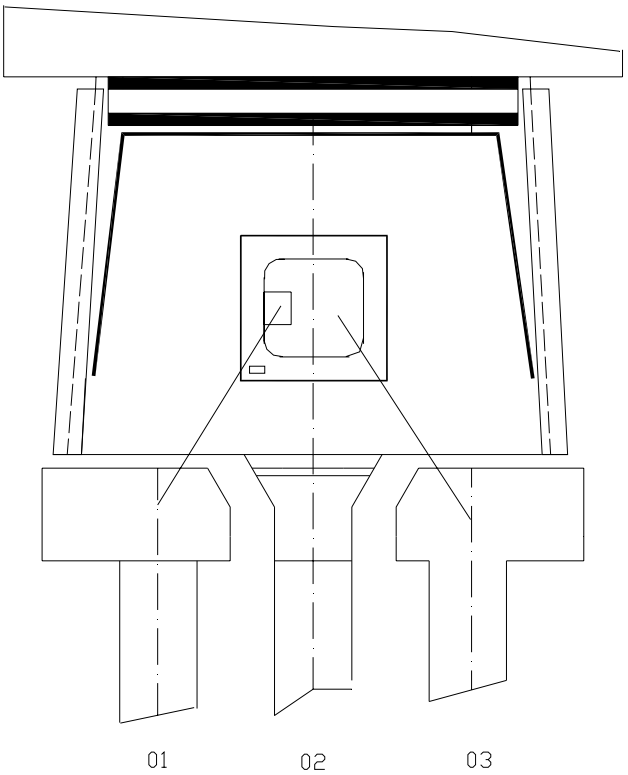
Electrical Characteristics (T_C = 25 °C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 uA	600	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature coefficient	I_D = 250 uA, referenced to 25 °C	-	0.6	-	V/°C
I_{DSS}	Drain-Source Leakage Current	V_{DS} = 600 V, V_{GS} = 0 V	-	-	10	uA
		V_{DS} = 480 V, T_C = 125 °C	-	-	100	uA
I_{GSS}	Gate-Source Leakage, Forward	V_{GS} = 30 V, V_{DS} = 0 V	-	-	100	nA
	Gate-source Leakage, Reverse	V_{GS} = -30 V, V_{DS} = 0 V	-	-	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 uA	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-state Resis-tance	V_{GS} = 10 V, I_D = 0.9 A	-	4.0	5.0	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} =25 V, f = 1 MHz	-	320	420	pF
C_{oss}	Output Capacitance		-	35	46	
C_{rss}	Reverse Transfer Capacitance		-	4.5	6.0	
Dynamic Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = 300 V, I_D =2.0 A, R_G =25 Ω Pulse Width ≤ 300us, Q > 50	-	8	30	ns
t_r	Rise Time		-	23	60	
$t_{d(off)}$	Turn-off Delay Time		-	25	60	
t_f	Fall Time		-	28	70	
Q_g	Total Gate Charge	V_{DS} = 480 V, V_{GS} = 10 V, I_D = 2.0 A	-	9.5	13	nC
Q_{gs}	Gate-Source Charge		-	1.6	-	
Q_{gd}	Gate-Drain Charge(Miller Charge)		-	4.0	-	

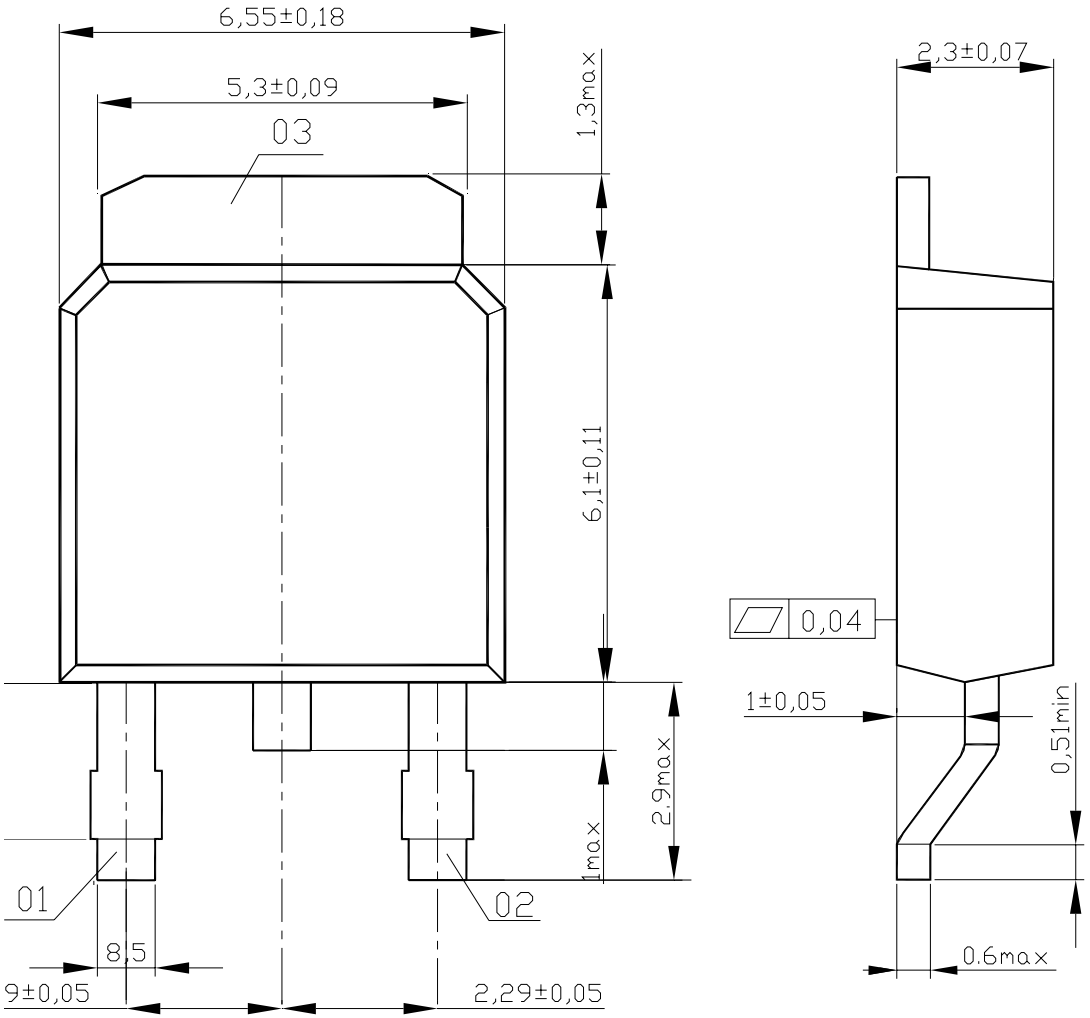
Chip size



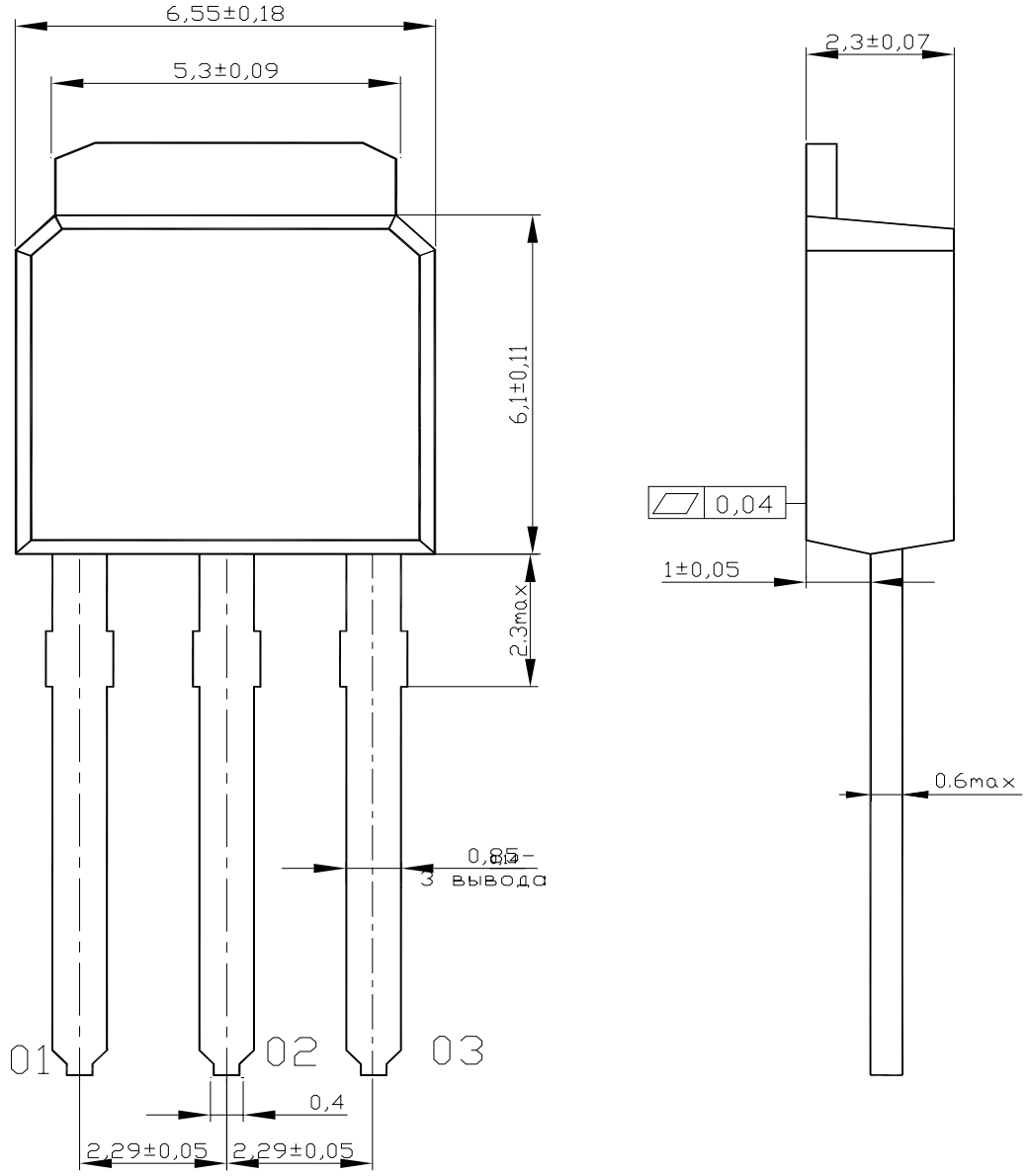
Package Chip



Package Dimensions D-PAK



Package Dimensions I-PAK



Package Dimensions TO-220 AB/3