

# SOT-23-3 Plastic-Encapsulate Transistors

**3416** MOSFET(N-Channel)

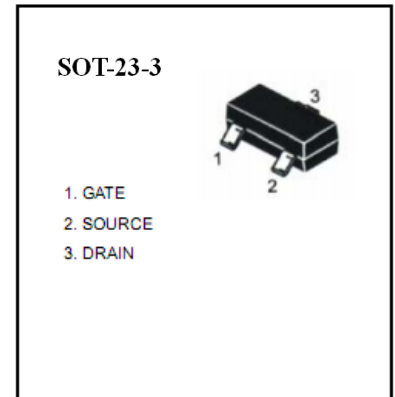
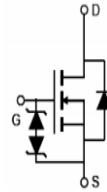
## FEATURES

High Power and current handing capability

Lead free product is acquired

Surface Mout Package

ESD Rating:2000V HBM



## MAXIMUM RATINGS (TA=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V <sub>DS</sub>	Drain-Source voltage	20	V
V <sub>GS</sub>	Gate-Source voltage	± 12	V
I <sub>D</sub>	Drain current	6	A
P <sub>D</sub>	Power Dissipation	1.4	W
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

## ELECTRICAL CHARACTERISTICS (T<sub>amb</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	20			V
Gate-Threshold Voltage	V <sub>th(GS)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250 uA	0.45	0.7	1.0	V
Gate-body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> = ± 10V			± 10	uA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	uA
Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4. 5V, I <sub>D</sub> =6A		19	22	m Ω
		V <sub>GS</sub> =2. 5V, I <sub>D</sub> =5A		21	27	m Ω
Forward Trans conductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =4.5A	11			s
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz		660		pF
Output Capacitance	C <sub>oss</sub>			160		
Reverse Transfer Capacitance	C <sub>rss</sub>			87		
Switching Capacitance						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =5V R <sub>GEN</sub> =3 Ω		0.5		nS
Turn-on Rise Time	t <sub>r</sub>			1		nS
Turn-off Delay Time	t <sub>d(off)</sub>			12		nS
Turn-off Fall Time	t <sub>f</sub>			4		nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =6A, V <sub>GS</sub> =4. 5V,		8		nC
Gate-Source Charge	Q <sub>gs</sub>			2.5		nC
Gate-Drain Charge	Q <sub>gd</sub>			3		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =1A			-1.2	V

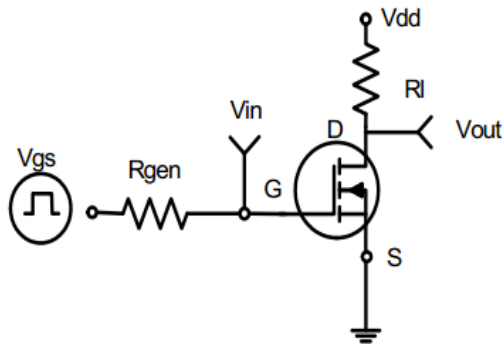


Figure 1: Switching Test Circuit

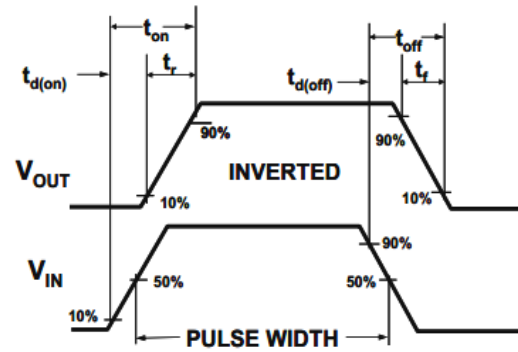


Figure 2: Switching Waveforms

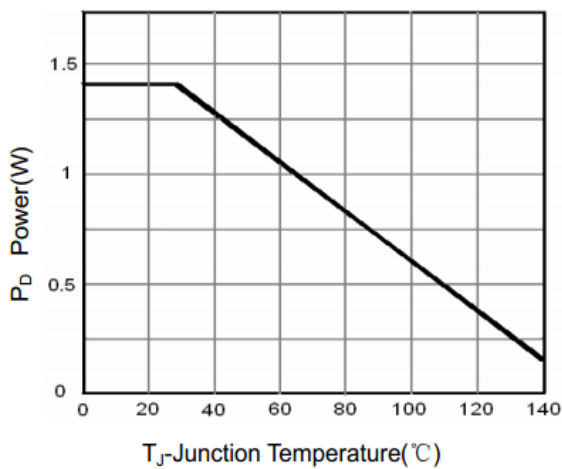


Figure 3 Power Dissipation

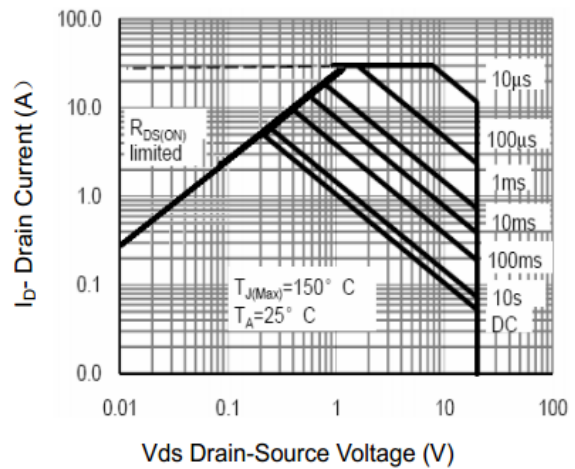


Figure 4 Safe Operation Area

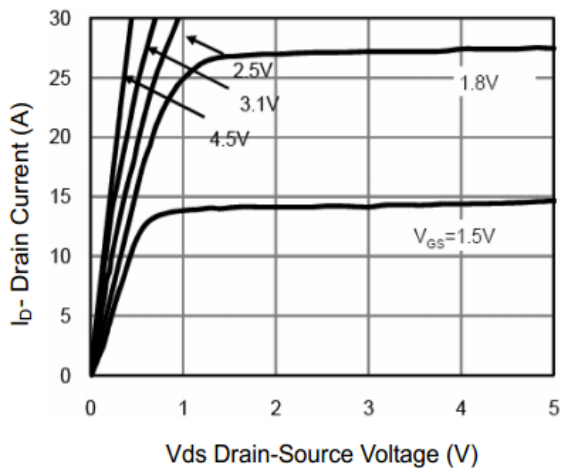


Figure 5 Output CHARACTERISTICS

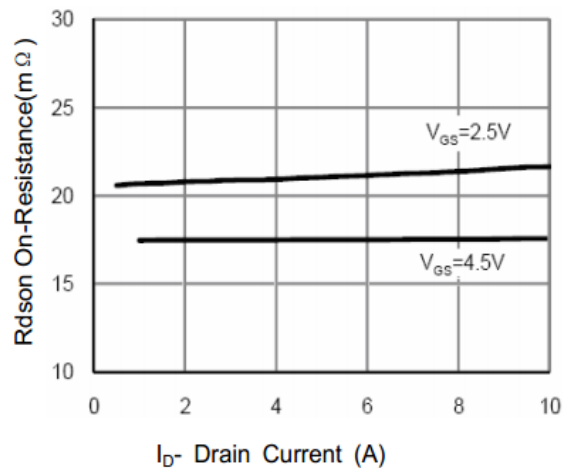


Figure 6 Drain-Source On-Resistance