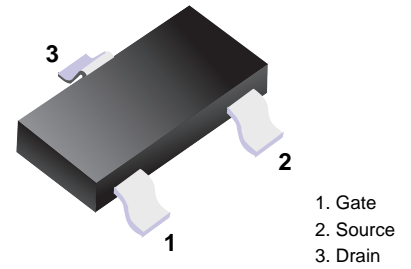


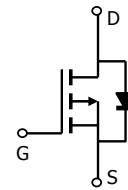
■ P-Channel MOSFET

■ FEATURES

High Power and current handing capability
Lead free product is acquired
Surface Mount Packing



■ Simplified outline(SOT-23)



■ Marking Code:S5

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

Symbol	Parameter	Value	Units
V _{DS}	Drain-Source voltage	-20	V
V _{GS}	Gate-Source voltage	±12	V
I _D	Drain current (T _c =25°C)	-4.1	A
P _D	Power Dissipation	1.7	W
T _j	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C

■ ELECTRICAL CHARACTERISTICS (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-20			V
Gate-Threshold Voltage	V _{th(GS)}	V _{DS} = V _{GS} , I _D =-250 uA	-0.45	-0.7	-1	V
Gate-body Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	uA
Drain-Source On-Resistance	r _{DS(ON)}	V _{GS} =-4.5V, I _D =-4.1A		39	52	mΩ
		V _{GS} =-2.5V, I _D =-3A		58	75	mΩ
Forward Trans conductance	g _{fs}	V _{DS} =-5V, I _D =-3.5A		8.5		s
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-4V, V _{GS} =0V, f=1MHz		740		pF
Output Capacitance	C _{oss}			290		
Reverse Transfer Capacitance	C _{rss}			190		
Switching Capacitance						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-4V, I _D =-3.3A, V _{GS} =-4.5V R _{GEN} =1Ω		12		nS
Turn-on Rise Time	t _r			35		nS
Turn-off Delay Time	t _{d(off)}			30		nS
Turn-off Fall Time	t _f			10		nS
Total Gate Charge	Q _g	V _{DS} =-4V, I _D =-4.1A, V _{GS} =-4.5V,		7.8		nC
Gate-Source Charge	Q _{gs}			1.2		nC
Gate-Drain Charge	Q _{gd}			1.6		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _D =-1.3A			-1.2	V
Diode Forward Current	I _S				-1.3	A

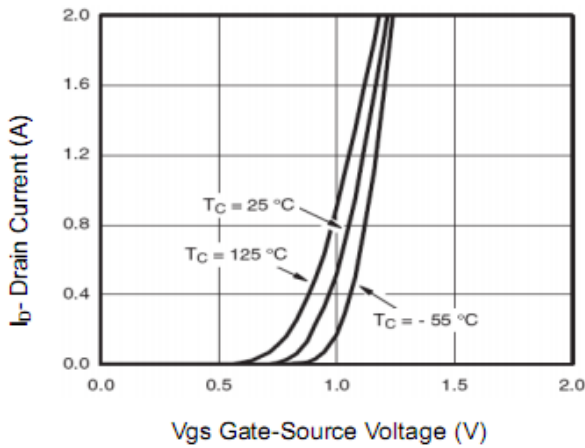


Figure 7 Transfer Characteristics

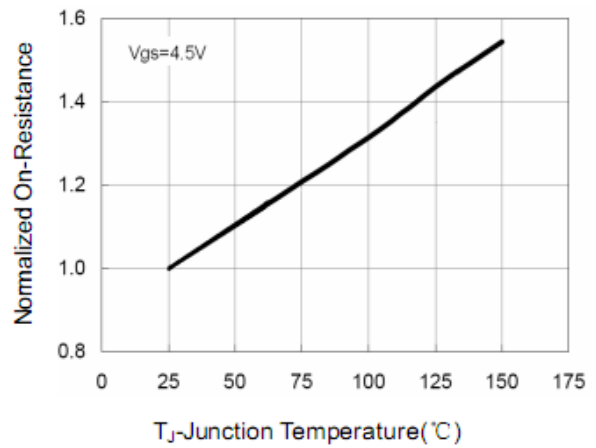


Figure 8 Drain-Source On-Resistance

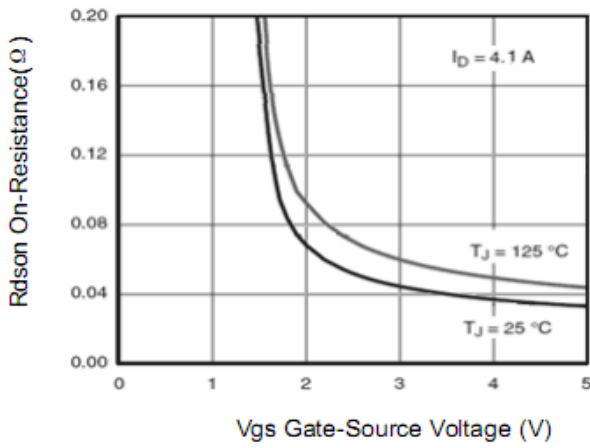


Figure 9 $R_{DS(on)}$ vs V_{GS}

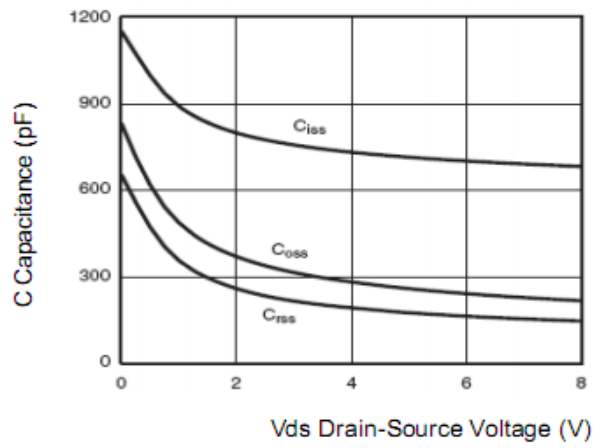


Figure 10 Capacitance vs V_{DS}

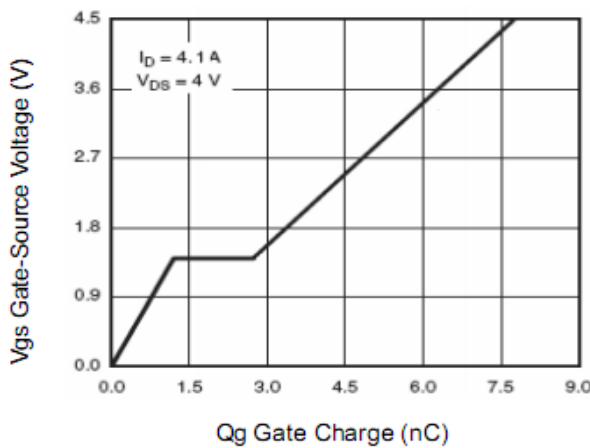


Figure 11 Gate Charge

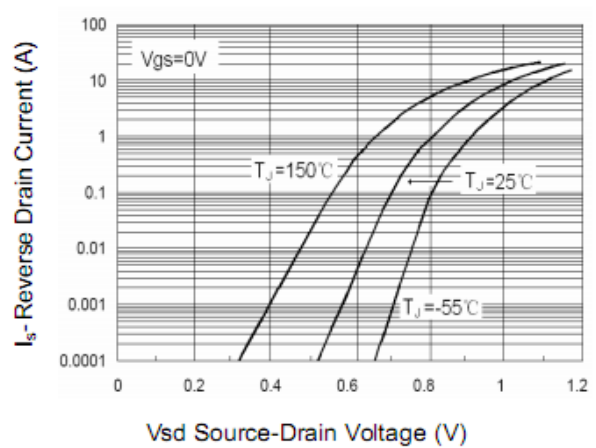
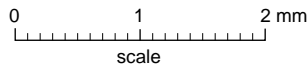
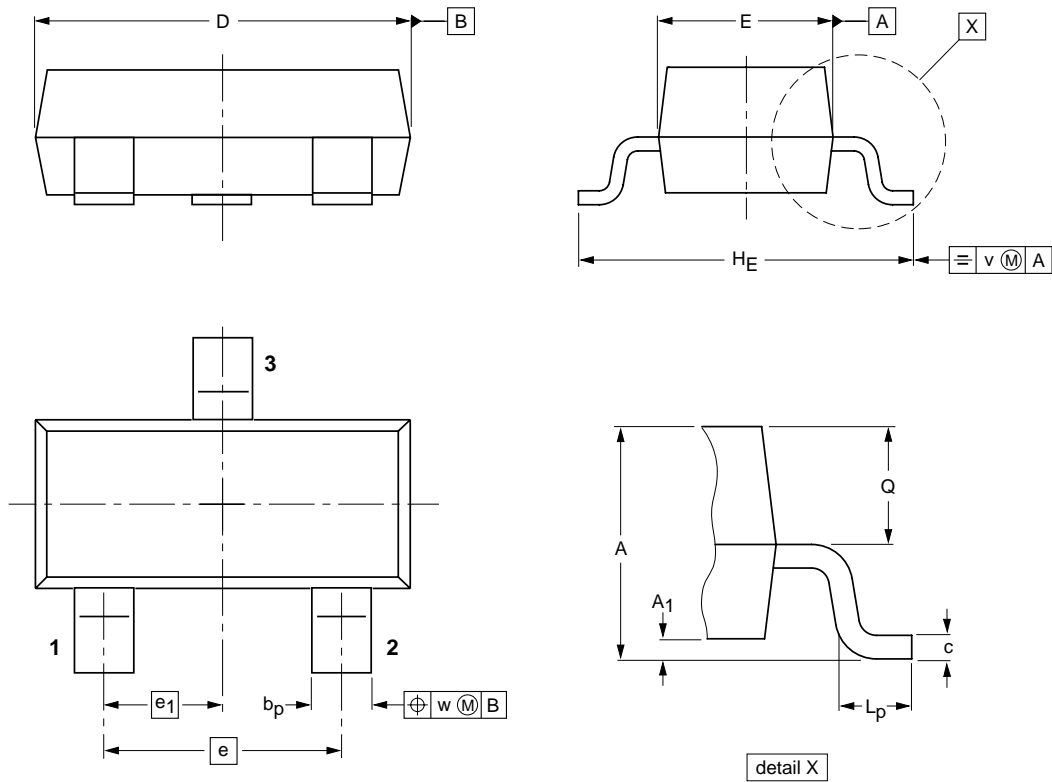


Figure 12 Source-Drain Diode Forward

Package Outline

SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1