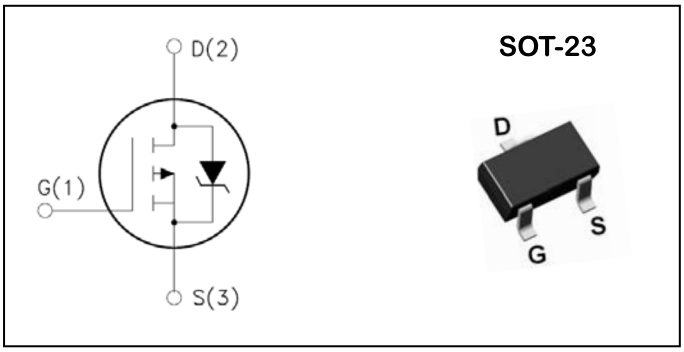
P-Channel Enhancement Mode Field Effect Transistor



PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ)
-20V	-5.4A	40mΩ

Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

Symbol	Parameter		Ratings	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±8	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current （3）	T_C=25°C	-3.3	A
Mounted on Large Heat Sink				
I_{DM}	300μs Pulse Drain Current Tested(1)	T_C=25°C	-10	A
I_D	Continuous Drain Current	T_C=25°C	-5.4	A
		T_C=70°C	-4.3	A
P_D	Maximum Power Dissipation （3）		1.7	W

1. Pulse width limited by maximum junction temperature.

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
R_{thJA}	Thermal resistance junction-ambient max （3）	130	°C/W

Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
On/off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250uA	-20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= -8V, V_{GS}=0V	--	--	-1	uA
		V_{DS}=-8V, V_{GS}=0V T_J=55°C	--	--	-10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250uA	-0.45	-1	-0.8	V
I_{GSS}	Gate Leakage Current	V_{GS}=±8V, V_{DS}=0V	--	--	±100	nA
$R_{DS(ON)}$	Drain-SourceOn-stateResistance(2)	V_{GS}= -4.5V, I_{DS}=-4.1A	--	32	40	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}= -4V, Frequency=1.0MHz	--	740	--	pF
C_{oss}	Output Capacitance		--	290	--	
C_{rss}	Reverse Transfer Capacitance		--	190	--	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time(1)	V_{DD}=-4V, I_D=- 4.1A, V_{GS}=-2.5V, R_{GEN}=1Ω, R_L=1.2Ω	--	13	--	ns
t_r	Turn-on Rise Time(1)		--	35	--	
$t_{d(OFF)}$	Turn-off Delay Time(1)		--	32	--	
t_f	Turn-off Fall Time(1)		--	10	--	
Q_g	Total Gate Charge(1)	V_{DS}=-4V, V_{GS}= -2.5V, I_{DS}=-4.1A	--	4.5	--	nC
Q_{gs}	Gate-Source Charge(1)		--	1.2	--	
Q_{gd}	Gate-Drain Charge(1)		--	1.6	--	
Diode Characteristics						
V_{SD}	Diode Forward Voltage(2)	I_{SD} = -3.3A, V_{GS} = 0	--	-0.8	-1.2	V

NOTES:

1. Independent of operating temperature.
2. Pulse Test : Pulse width $\leqslant$ 300 μs, Duty cycle $\leqslant$ 2%
3. Surface Mounted on FR4 Board, t < 10 sec.

Typical Performance Characteristics

Figure 1: Output Characteristics

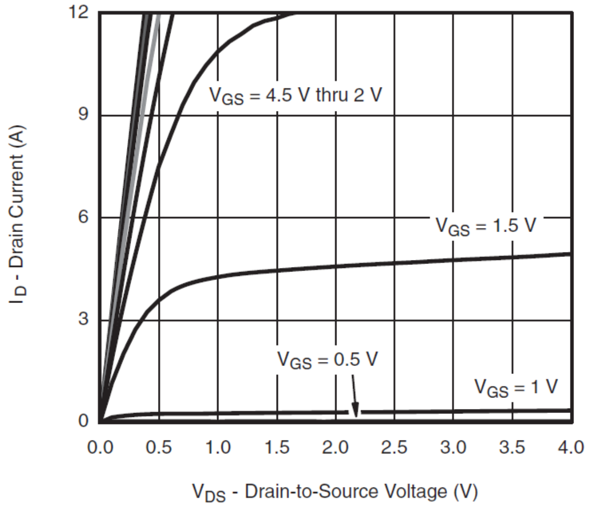


Figure 2: Transfer Characteristics

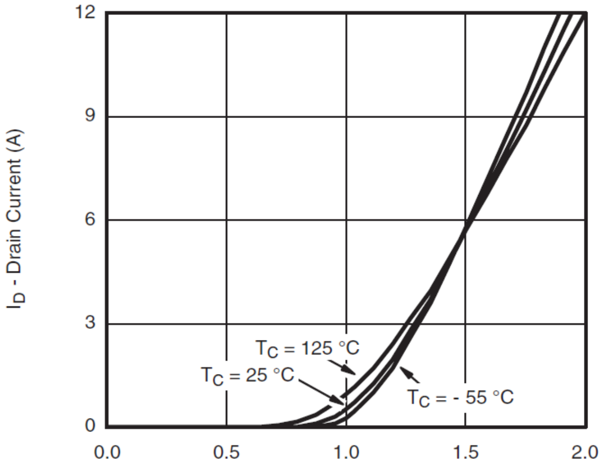


Figure 3: Gate Threshold Voltage

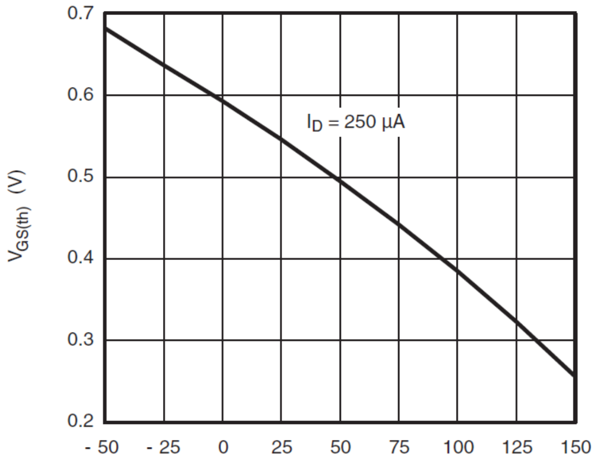


Figure 4: On-Resistance Variation with Temperature

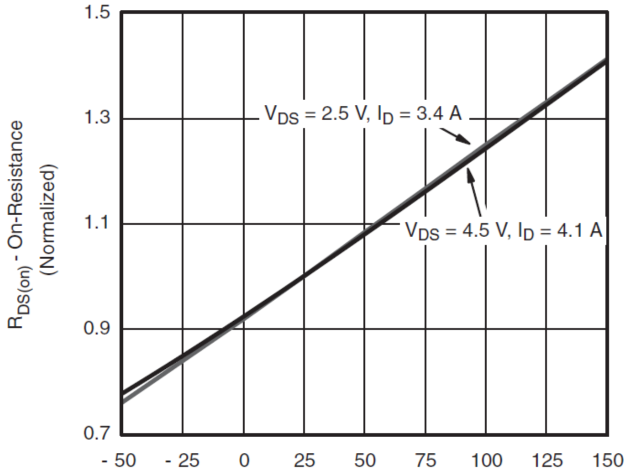


Figure 5: Drain Current.

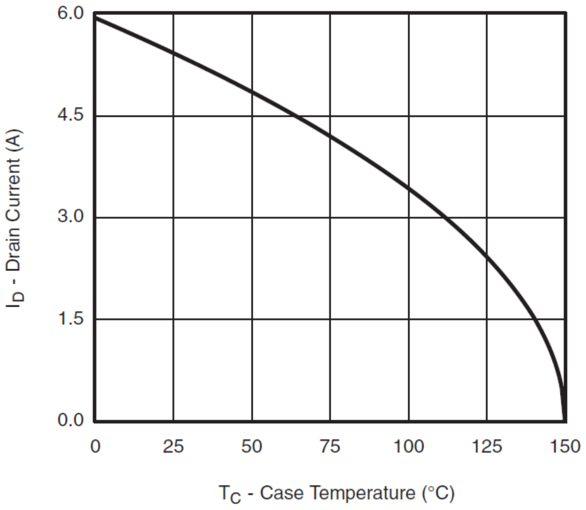


Figure 6: On-Resistance vs. Drain Current and Gate Voltage

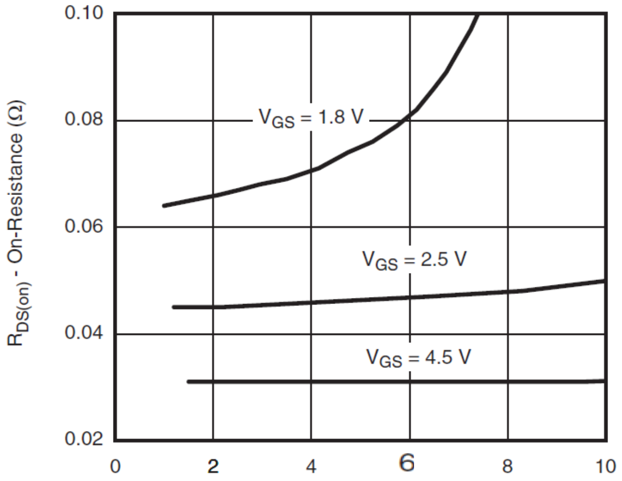


Figure 7: Gate Charge

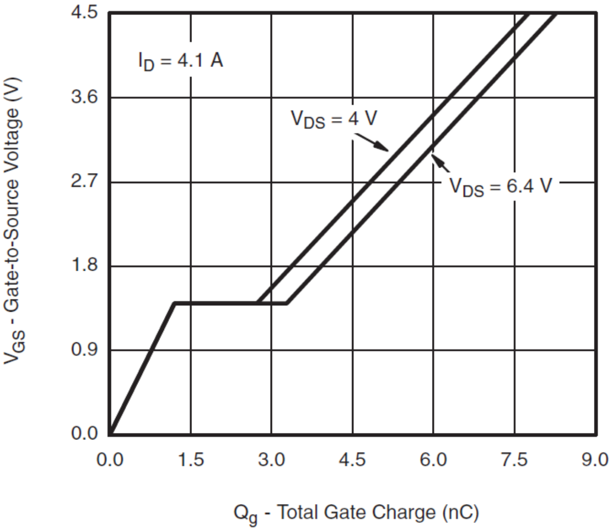


Figure 8: Maximum Safe Operating Area

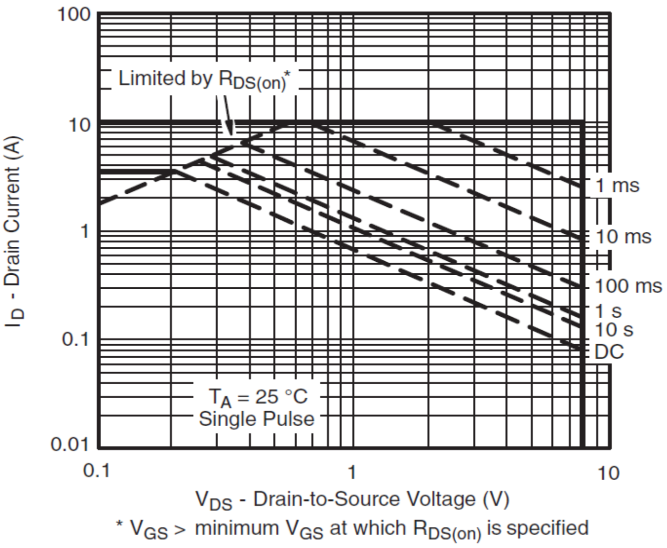
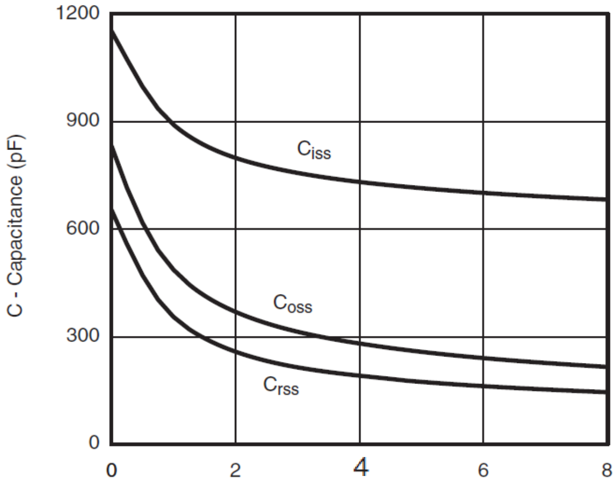
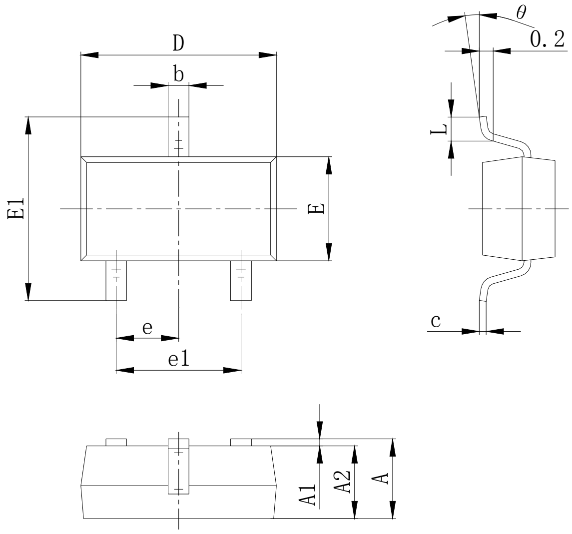


Figure 9: Capacitance Characteristics.



PACKAGE MECHANICAL DATA

SOT-23 Package Dimension



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°