

P-Channel Enhancement Mode Field Effect Transistor

● Features

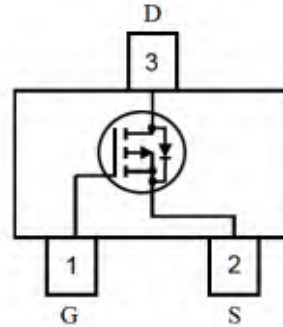
$V_{DS} (V) = -16V, I_D = -4A$

$R_{DS(ON)} < 23m\Omega @ V_{GS} = -4.5V$

$R_{DS(ON)} < 27m\Omega @ V_{GS} = -2.5V$

SOT23 Package

● Pin Configurations



● General Description

These P-Channel enhancement mode field effect transistors are produced using high cell density, DMOS technology.

● Absolute Maximum Ratings @ $T_A=25^{\circ}C$ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-16	V
Gate-Source Voltage		V_{GSS}	± 12	V
Drain Current (Continuous)	$T_A=25^{\circ}C$	I_D	-4	A
	$T_A=70^{\circ}C$		/	
Drain Current (Pulse)		I_{DM}	-12.55	A
Power Dissipation	$T_A=25^{\circ}C$	P_D	0.54	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	$^{\circ}C$

● Electrical Characteristics @T_A=25°C unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON/OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-16	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20 V , V _{GS} = 0V	--	--	-1	μA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _{DS} =-250μA	-0.5	-0.8	-1.4	V
Gate Leakage Current	I _{GSS}	V _{GS} =±8V , V _{DS} =0V	--	--	±100	nA
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} = -4.5V , I _D = -1A	--	21	23	mΩ
		V _{GS} = -2.5V , I _D = -1A	--	--	27	mΩ
Forward Transconductance	g _{FS}	V _{DS} = -5V , I _D = -3A	--	10	--	S
Diode Forward Voltage	V _{SD}	I _{SD} = -1.6A , V _{GS} = 0V	--	-	-1.2	V
Switching CHARACTERISTICS						
Total Gate Charge	Q _g	V _{DS} = -6V, I _D = -2.8A V _{GS} = -4.5V	--	5.4	--	nC
Gate-Source Charge	Q _{gs}		--	0.8	--	nC
Gate-Drain Charge	Q _{gd}		--	1.2	--	nC
Turn-on Delay Time	t _{d (on)}	V _{DD} = -6V, R _L =6Ω I _D = -1A, V _{GEN} = -4.5V R _G = 6 Ω	--	11	--	ns
Turn-on Rise Time	t _r		--	25	--	ns
Turn-off Delay Time	t _{d(off)}		--	32	--	ns
Turn-off Fall Time	t _f		--	8.6	--	ns
Dynamic CHARACTERISTICS						
Input Capacitance	C _{iss}	V _{GS} =0V,V _{DS} = -6V,f= 1.0MHz	--	405	--	pF
Output Capacitance	C _{oss}		--	78	--	pF
Reverse Transfer Capacitance	C _{rss}		--	65	--	pF

Notes:

1. Pulse width limited by maximum junction temperature.
2. Pulse test: PW ≤ 300μs, duty cycle ≤ 2%.
3. For design AID only, not subject to production testing.
4. Switching time is essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

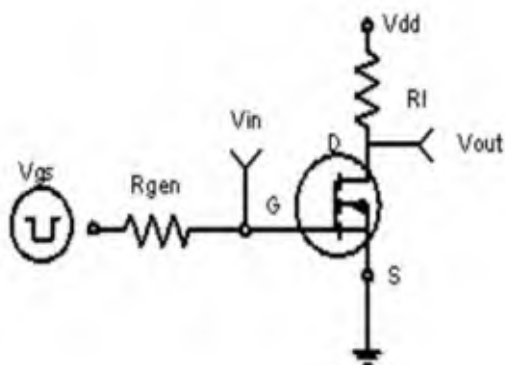


Figure 1: Switching Test Circuit

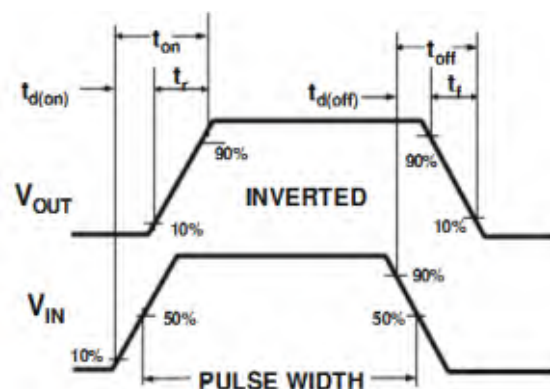


Figure 2: Switching Waveforms

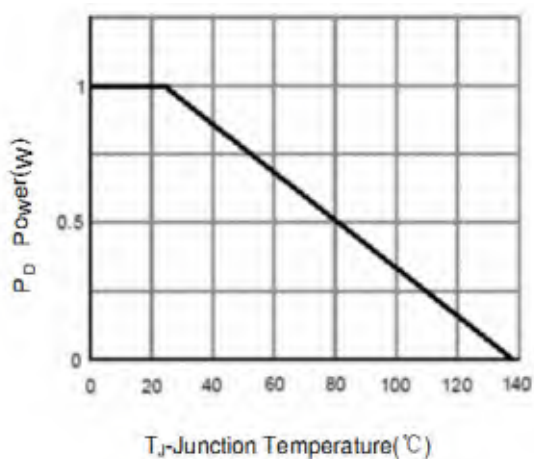


Figure 3 Power Dissipation

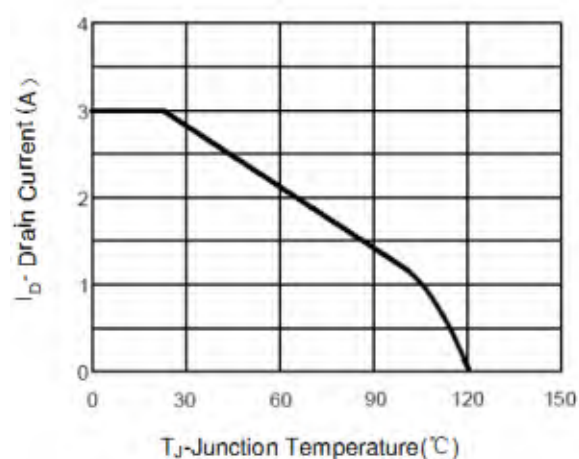


Figure 4 Drain Current

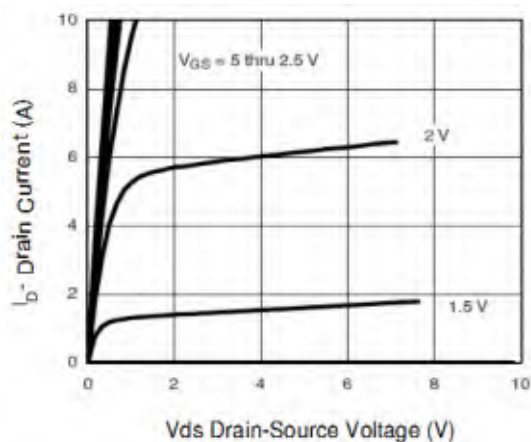


Figure 5 Output CHARACTERISTICS

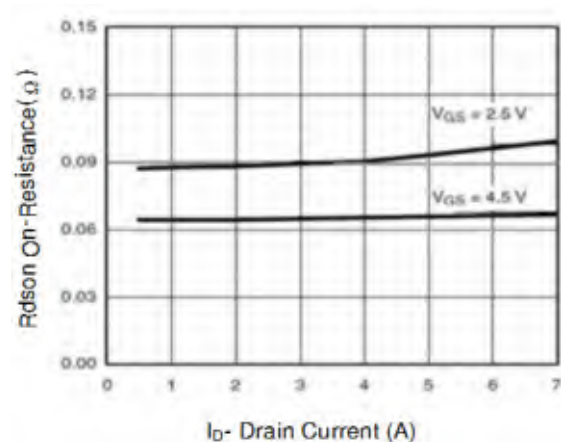


Figure 6 Drain-Source On-Resistance

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

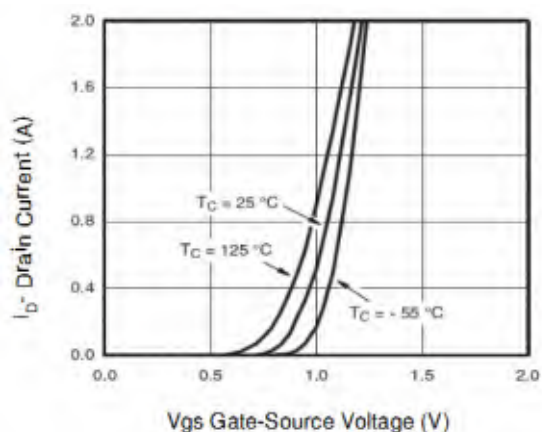


Figure 7 Transfer Characteristics

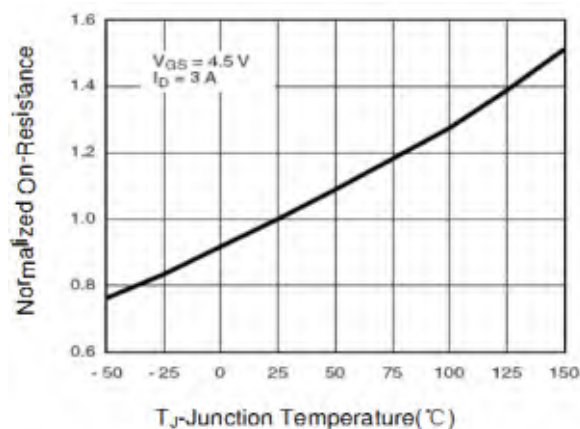


Figure 8 Drain-Source On-Resistance

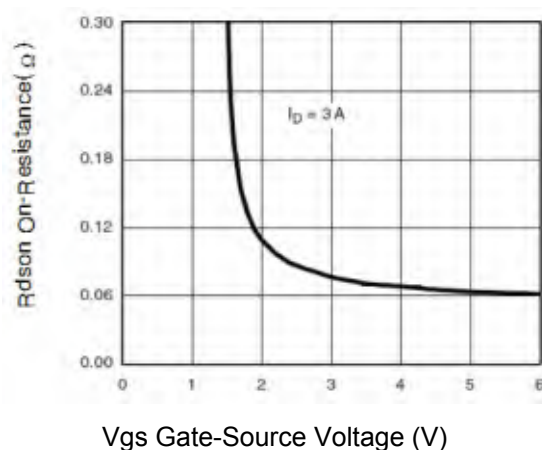


Figure 9 Rdson vs Vgs

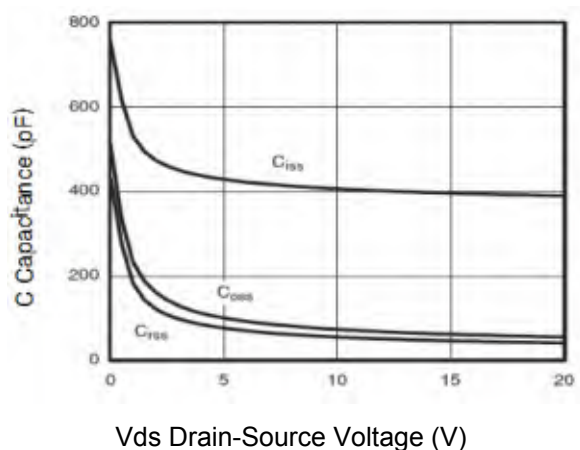


Figure 10 Capacitance vs Vds

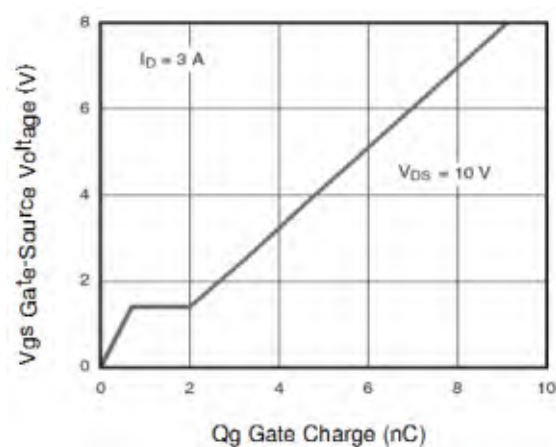


Figure 11 Gate Charge

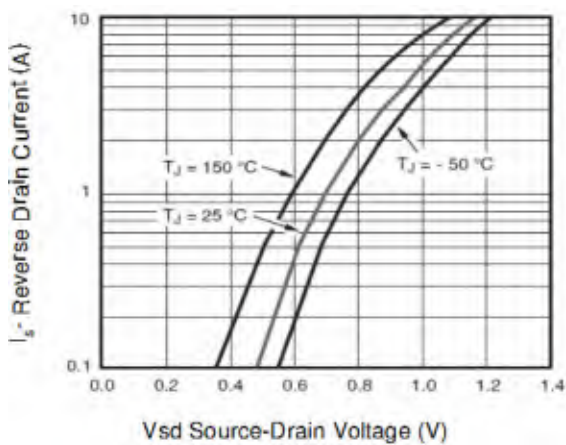
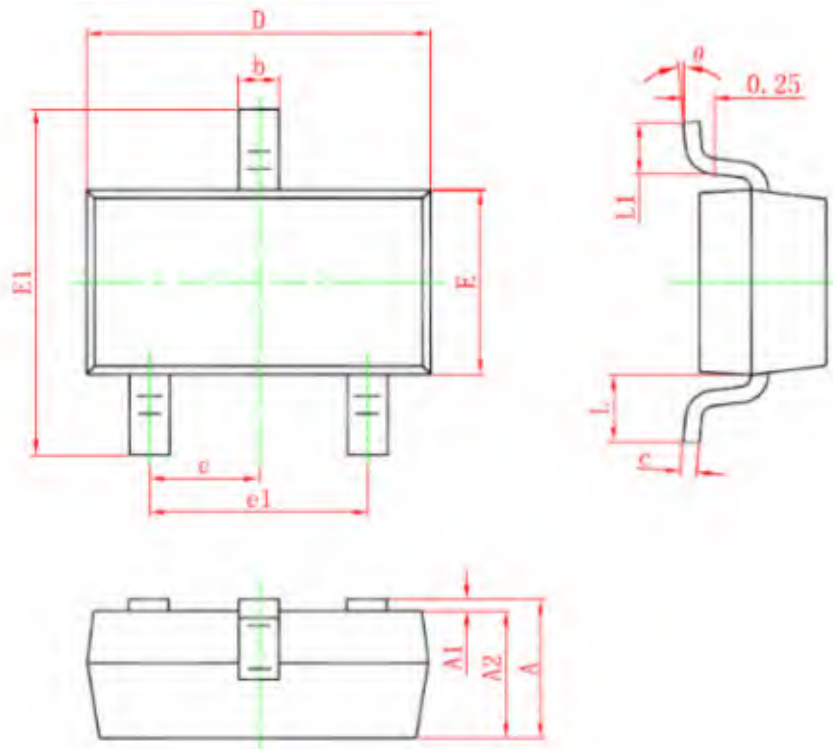


Figure 12 Source- Drain Diode Forward

● Package Information



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°