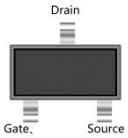
Features

- *P-Channel , Low RDS(on) @V_{GS}=-4.5V*
- *-2.5V Logic Level Control*
- *Green Device Available*

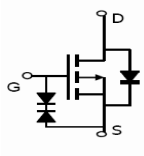
$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	I_D Max
−20V	550mΩ@−4.5V	−0.8A
	780mΩ@−2.5V	

Applications

- *Load Switch*
- *PWM Circle*
- *DC to DC*



SOT-523



PMOS

Order Information

Product	Package	Reel	Box	Carton	Notes
CS3139	SOT-523	3000PCS	45000PCS	180000CPCS	

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		-20	V
V_{GS}	Gate-Source Voltage		±12	V
$T_{J,STG}$	Junction and Storage Temperature Range		-50 to 150	℃
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested①	T_A=25°C	-3.2	A
I_S	Diode continuous forward current②	T_A=25°C	-3.2	A
I_D	Continuous Drain Current	T_A=25°C	-0.8	A
		T_A=100°C	-0.48	
P_D	Maximum Power Dissipation	T_A=25°C	0.4	W
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient ②		125	°C/W

Note:

① Repetitive Rating: Pulse width limited by maximum junction temperature.
② Surface Mounted on FR4 Board, t ≤ 10 sec.
③ Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-20	-26	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_C=25℃)	VDS=-20V, VGS=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±10V, VDS=0V	--	--	±10	μA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS, ID=-250μA	-0.4	-0.6	-1.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance①	VGS=-4.5V, ID=-0.5A	--	450	650	mΩ
		VGS=-2.5V, ID=-0.4A	--	550	750	mΩ
		VGS=-1.8V, ID=-0.3A	--	800	950	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	VDS=-12V, VGS=0V, f=1MHz	–	40	–	pF
C_{oss}	Output Capacitance		–	19	–	pF
C_{rss}	Reverse Transfer Capacitance		–	11	–	pF
Q_g	Total Gate Charge	VDS=-12V ID=-0.2A VGS=-4.5V	–	1.2	–	nC
Q_{gs}	Gate Source Charge		–	0.1	–	nC
Q_{gd}	Gate Drain Charge		–	0.3	–	nC
Switching Characteristics @ T_J = 25°C (unless otherwise stated)						
$t_{d(on)}$	Turn on Delay Time	VDD=-12V, ID=-0.5A, RG=6Ω, VGS=-4.5V	–	20	–	ns
t_r	Turn on Rise Time		–	12	–	ns
$t_{d(off)}$	Turn Off Delay Time		-	9	–	ns
t_f	Turn Off Fall Time		–	8	–	ns
Source Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
V_{SD}	Diode Forward Voltage③	I_D=-0.3A,VGS=0V	--	-0.7	-1.2	V

Typical Performance Characteristics

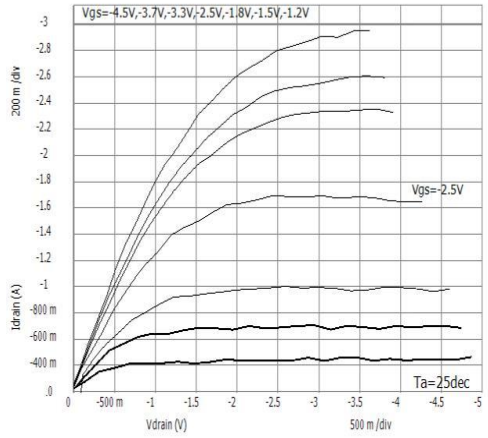


Fig 1. Output Characteristics

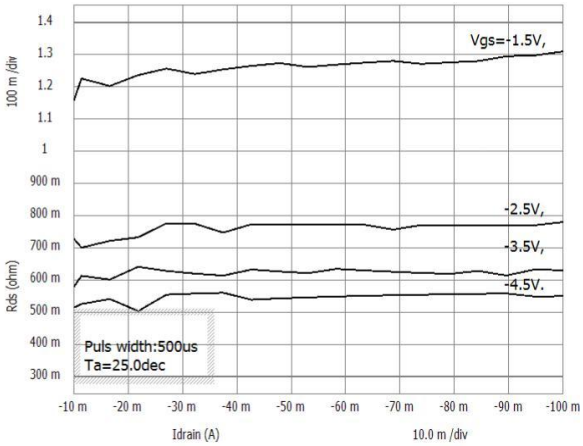


Fig 2. Drain-Source On-Resistance

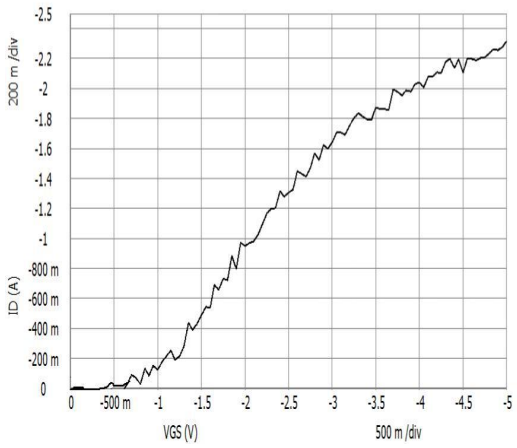


Fig 3.Transfer Characteristics

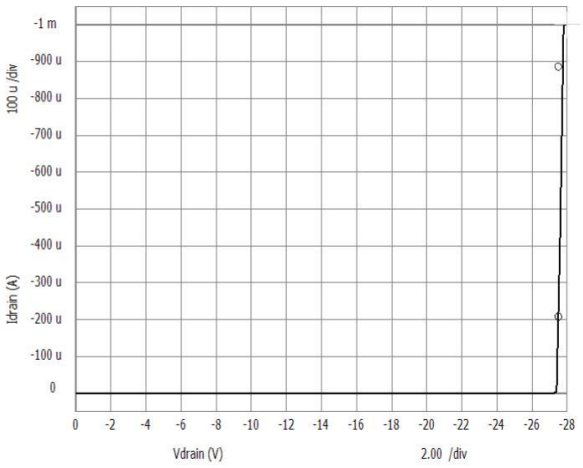


Fig 4. Drain-Source Breakdown Characteristics

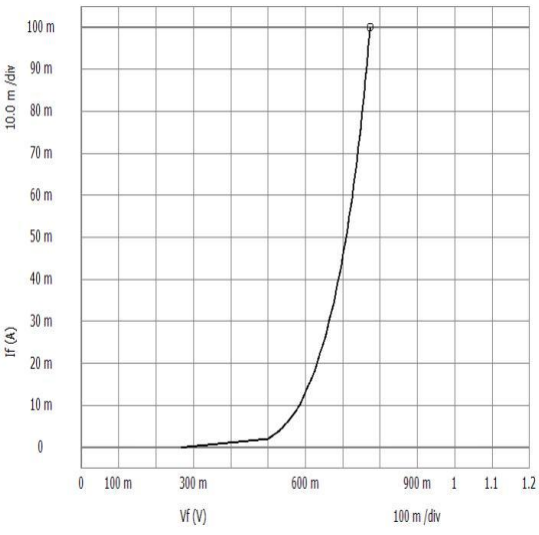


Fig.5.Body Diode Characteristic

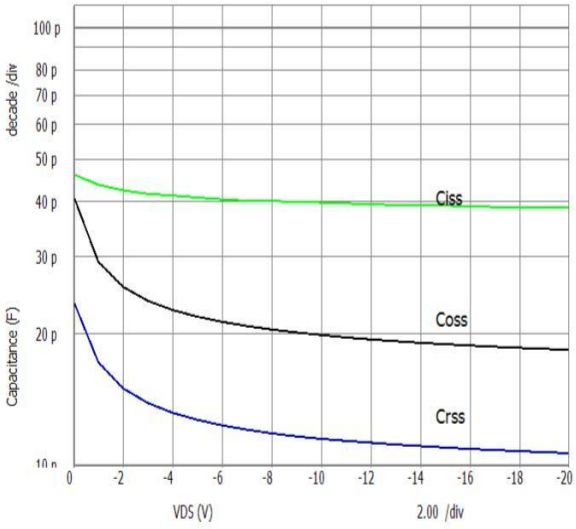
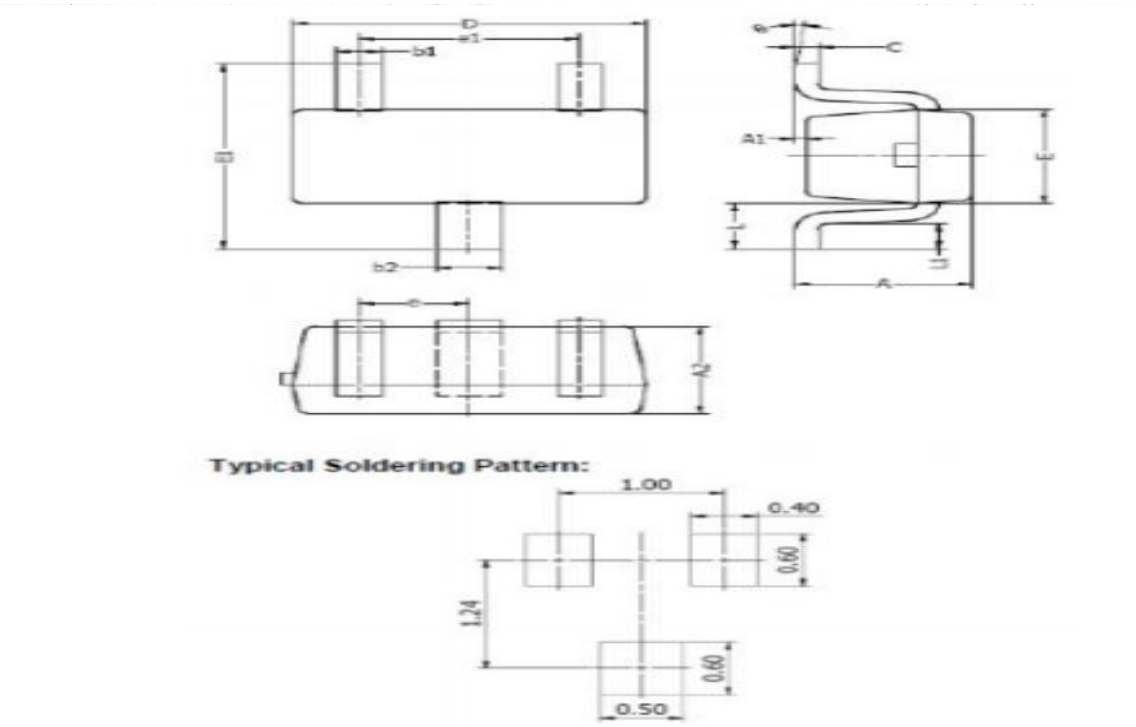


Fig 6. Capacitance Vs Drain-Source Voltage

SOT-523 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP		0.020 TYP	
e1	0.90	1.10	0.035	0.043
L	0.40 REF		0.016 REF	
L1	0.10	0.30	0.004	0.012
θ	0°	8°	0°	8°