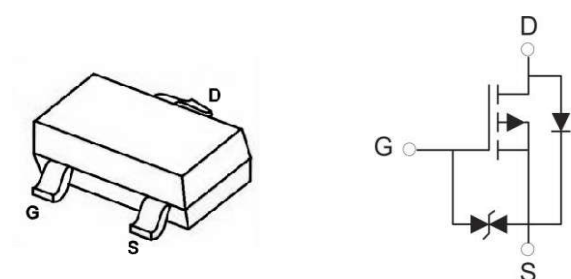


## 20V P-Channel MOSFET

### General Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

### SOT-323 Pin Configuration



### Product Summary

$BV_{DSS}$	$R_{DS(ON)}$ Max.	$I_D$
-20 V	0.75 $\Omega$ @ -4.5 V	-0.66 A
	1.0 $\Omega$ @ -2.5 V	

### Features

- Surface Mount Package
- P-Channel Switch with Low  $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected

### Applications

- Load/Power Switching
- Interfacing, Logic Switching
- Battery Management for Ultra Small Portable Electronics

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-Source Voltage	-20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current – Continuous	-0.66	A
$I_{DM}$	Drain Current – Pulsed	-1.2	A
$P_D$	Power Dissipation	0.2	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	150	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient		625	$^\circ\text{C/W}$

## Electrical Characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

### Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$ , $I_D = -250\text{ }\mu\text{A}$	-20			V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS} = -16\text{ V}$ , $V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 10\text{ V}$ , $V_{DS} = 0\text{ V}$			$\pm 10$	$\mu\text{A}$

### On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>1</sup>	$V_{GS} = -4.5\text{ V}$ , $I_D = -0.5\text{ A}$		0.65	0.75	$\Omega$
		$V_{GS} = -2.5\text{ V}$ , $I_D = -0.2\text{ A}$		0.85	1.0	
		$V_{GS} = -1.8\text{ V}$ , $I_D = -0.1\text{ A}$		1.2		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$ , $I_D = -250\text{ }\mu\text{A}$	-0.35	-0.65	-1	V

### Dynamic and switching Characteristics<sup>2</sup>

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$T_{d(on)}$	Turn-On Delay Time	$V_{DS} = -10\text{ V}$ , $V_{GS} = -4.5\text{ V}$ , $R_G = 10\text{ }\Omega$ , $I_D = -0.2\text{ A}$		9		ns
$T_r$	Rise Time			5.7		
$T_{d(off)}$	Turn-Off Delay Time			32.6		
$T_f$	Fall Time			20.3		
$C_{iss}$	Input Capacitance	$V_{DS} = -16\text{ V}$ , $V_{GS} = 0\text{ V}$ , $f = 1\text{ MHz}$		113		pF
$C_{oss}$	Output Capacitance			15		
$C_{rss}$	Reverse Transfer Capacitance			9		

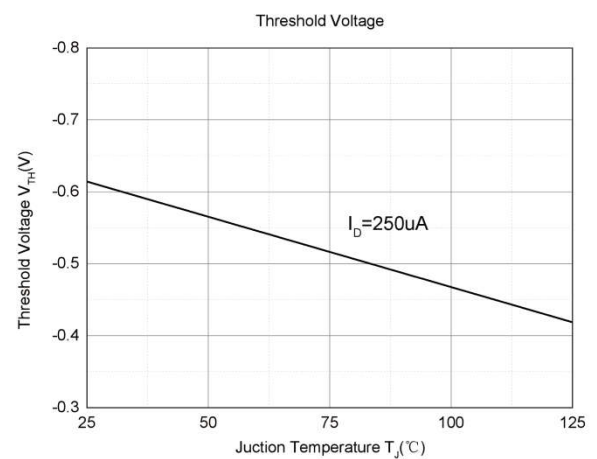
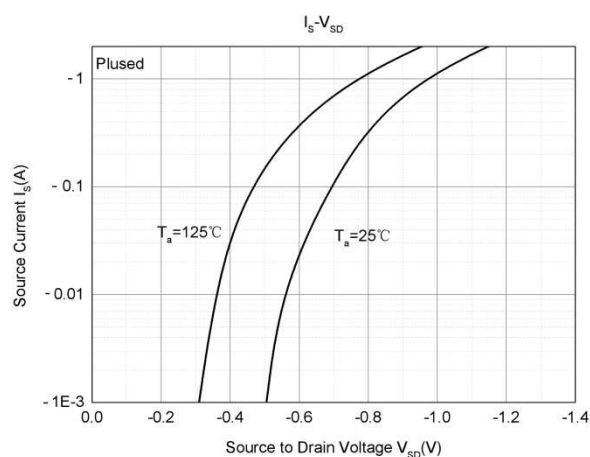
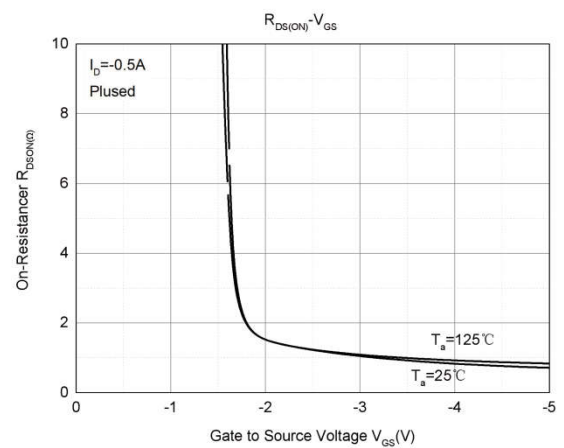
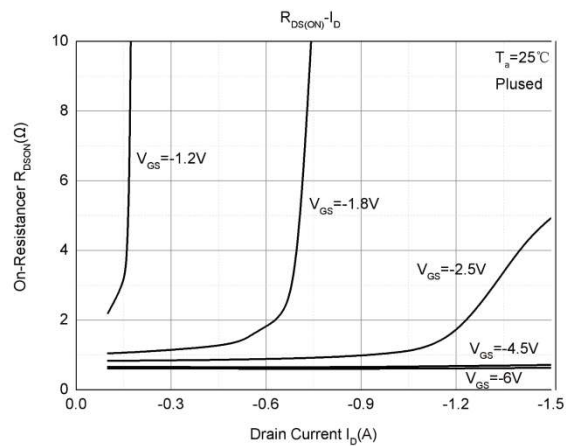
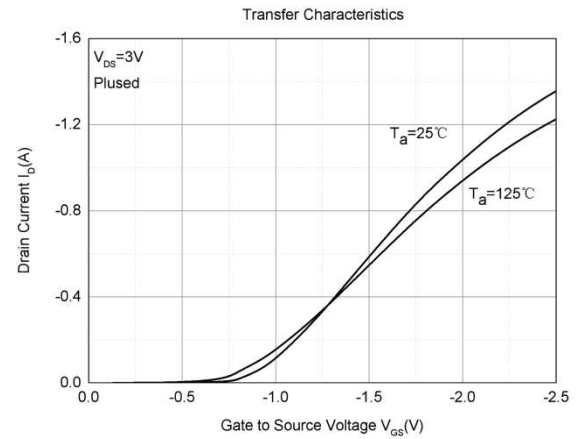
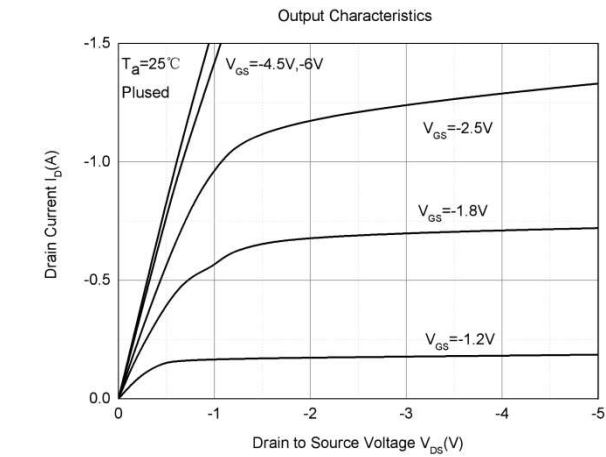
### Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$V_{SD}$	Diode Forward Voltage	$V_{GS} = 0\text{ V}$ , $I_S = -0.5\text{ A}$			-1.2	V

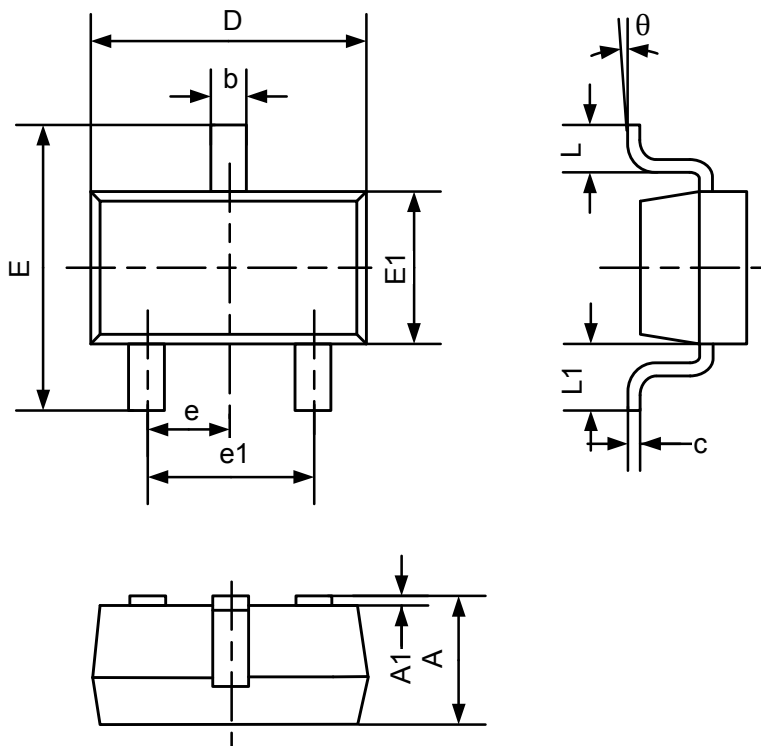
Note :

1. The data tested by pulsed , pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

## Typical Characteristics



## SOT-323 Package Information



Symbol	Dimensions in Millimeters	
	Min	Max
A	0.900	1.100
A1	0.000	0.100
b	0.200	0.400
c	0.080	0.150
D	2.000	2.200
E	2.150	2.450
E1	1.150	1.350
e	0.650BSC	
e1	1.200	1.400
L	0.260	0.460
L1	0.525REF	
$\theta$	0°	8°

V 1.0