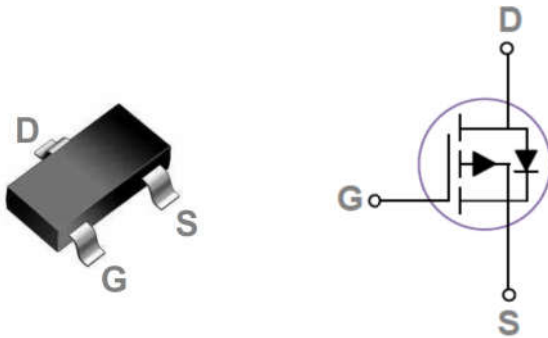


## 30V P-Channel MOSFET

### 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-23 Pin Configuration



### Product Summary

$BV_{DSS}$	$R_{DS(ON)}$ Max.	$I_D$
-30 V	65 m $\Omega$ @ -10 V	-4.2 A
	75 m $\Omega$ @ -4.5 V	
	90 m $\Omega$ @ -2.5 V	

### Features

- TrenchFET Power MOSFET
- Exceptional on-resistance and maximum DC current

### Applications

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	-30	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current – Continuous	-4.2	A
$P_D$	Power Dissipation	1.2	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		104	$^\circ\text{C/W}$

## 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	$V_{GS} = 0\text{ V}$ , $I_D = -250\ \mu\text{A}$	-30			V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS} = -24\text{ V}$ , $V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 12\text{ V}$ , $V_{DS} = 0\text{ V}$			$\pm 100$	nA

### On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>1</sup>	$V_{GS} = -10\text{ V}$ , $I_D = -4.2\text{ A}$		50	65	m $\Omega$
		$V_{GS} = -4.5\text{ V}$ , $I_D = -4.0\text{ A}$		60	75	
		$V_{GS} = -2.5\text{ V}$ , $I_D = -1.0\text{ A}$		70	90	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$ , $I_D = -250\ \mu\text{A}$	-0.7	-0.9	-1.3	V
$g_{FS}$	Forward Transconductance <sup>1</sup>	$V_{DS} = -5\text{ V}$ , $I_D = -4.2\text{ A}$		10		S

### Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$Q_g$	Total Gate Charge <sup>2</sup>	$V_{DS} = -15\text{ V}$ , $V_{GS} = -4.5\text{ V}$ , $I_D = -4\text{ A}$		9.5		nC
$Q_{gs}$	Gate-Source Charge <sup>2</sup>			2		
$Q_{gd}$	Gate-Drain Charge <sup>2</sup>			3		
$T_{d(on)}$	Turn-On Delay Time <sup>2</sup>	$V_{DS} = -15\text{ V}$ , $V_{GS} = -10\text{ V}$ , $R_L = 3.6\ \Omega$ , $R_{GEN} = 6\ \Omega$		7		nS
$T_r$	Rise Time <sup>2</sup>			3		
$T_{d(off)}$	Turn-Off Delay Time <sup>2</sup>			35		
$T_f$	Fall Time <sup>2</sup>			12		
$C_{iss}$	Input Capacitance	$V_{DS} = -15\text{ V}$ , $V_{GS} = 0\text{ V}$ , $F = 1\text{ MHz}$		954		pF
$C_{oss}$	Output Capacitance			115		
$C_{riss}$	Reverse Transfer Capacitance			77		

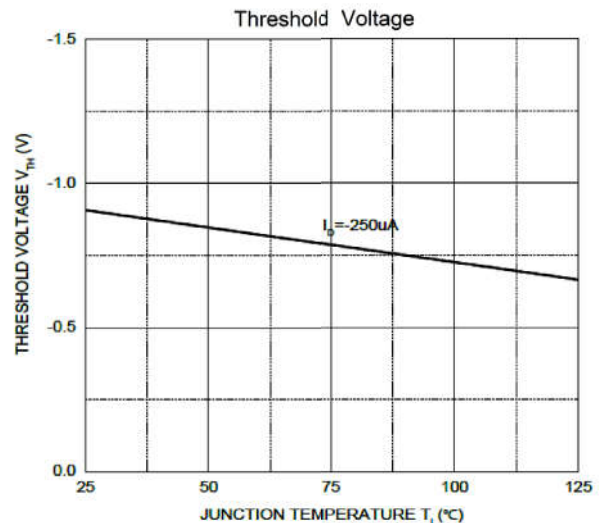
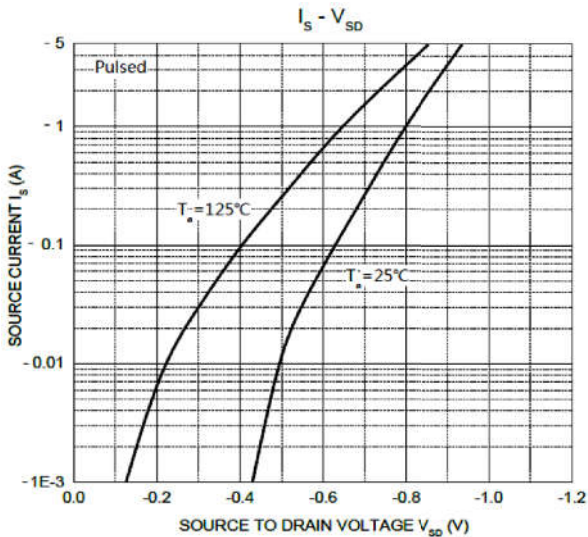
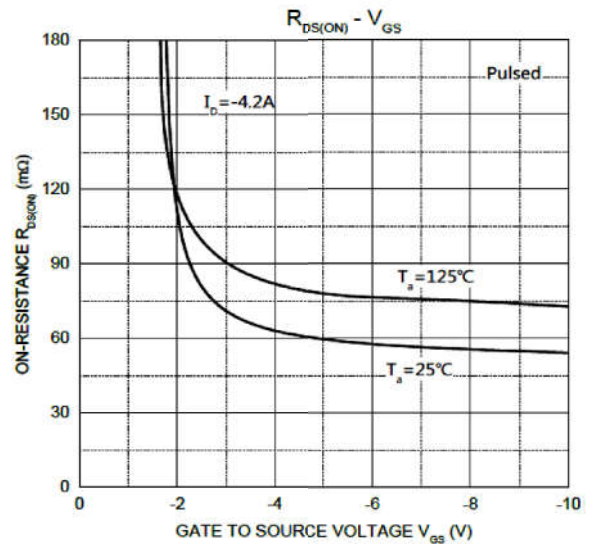
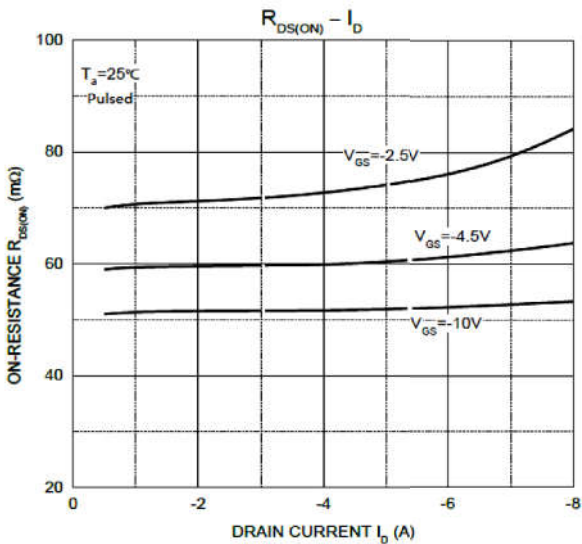
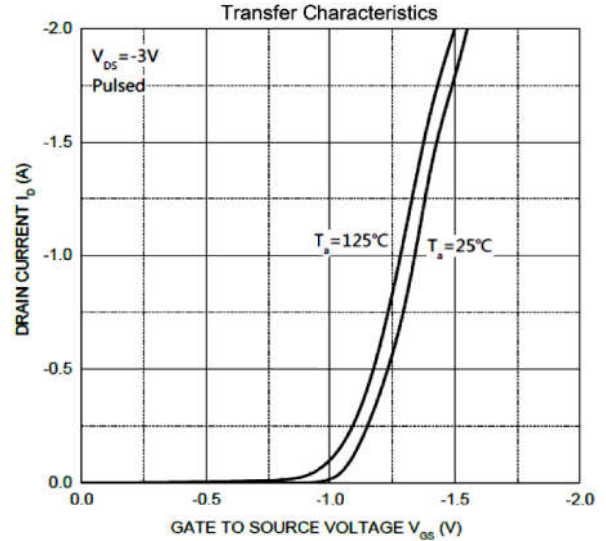
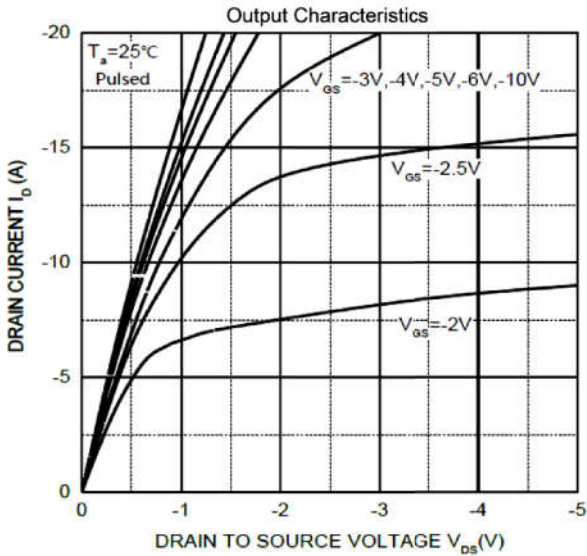
### Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G = V_D = 0\text{ V}$ , Force Current			-4.2	A
$I_{SM}$	Pulsed Source Current				-8.4	A
$V_{DS}$	Diode Forward Voltage <sup>1</sup>	$V_{GS} = 0\text{ V}$ , $I_S = -4.2\text{ A}$			-1.2	V

Note :

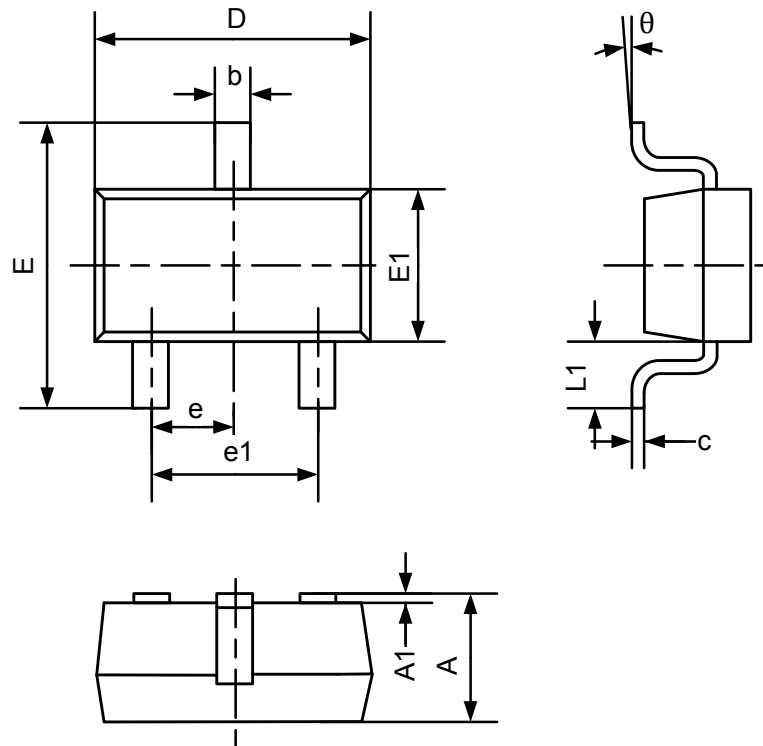
1. The data tested by pulsed , pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production testing.

**Typical Characteristics**



## Package Information

### SOT-23



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.90	1.15
A1	0.00	0.10
b	0.30	0.51
c	0.08	0.18
D	2.80	3.04
E	2.10	2.64
E1	1.20	1.40
e	0.95BSC	
e1	1.90BSC	
L1	0.55BSC	
$\theta$	0°	8°