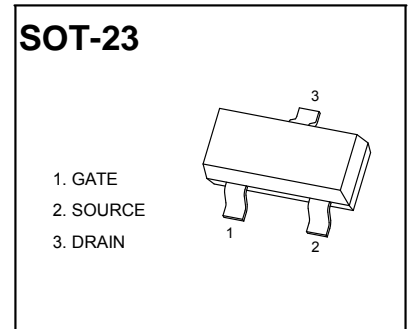


**SOT-23 Plastic-Encapsulate MOSFETS**
**30V P-Channel Advanced Power MOSFET**

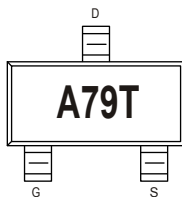
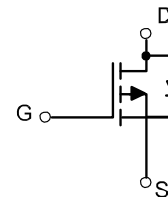
$V_{(BR)DSS}$	$R_{DS(on)Typ}$	$I_D Max$
-30V	43mΩ@ -10V	- 4.1A
	66mΩ@ -4.5V	


**FEATURE**

- Low  $R_{DS(on)}$  @  $V_{GS} = -10V$
- -5V Logic Level Control

**APPLICATION**

- Load Switch
- Switching circuits
- High-speed line driver
- Power Management Functions

**MARKING**

**Equivalent circuit**

**PACKAGE SPECIFICATIONS**

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	178	3000	203×203×195	45000	438×438×220	180000

**Maximum Ratings and Thermal Characteristics (TA = 25°C unless otherwise noted)**

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	±20		
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	-4.1	A
		$T_A = 70^\circ C$	-3.2	
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	-16.4	A	
Maximum Power Dissipation <sup>1), 2)</sup>	$P_D$	$T_A = 25^\circ C$	1.2	W
		$T_A = 70^\circ C$	0.9	
Junction Temperature	$T_J$	150	°C	
Storage Temperature	$T_{stg}$	-50 to 150	°C	
Thermal Resistance from Junction-to-Ambient (t≤5s)	$R_{\theta JA}$	80	°C/W	

**Notes**

- <sup>1)</sup> Pulse width limited by maximum junction temperature.  
<sup>2)</sup> Surface Mounted on FR4 Board, t ≤ 5 sec.

The above data are for reference only.



**MOSFET ELECTRICAL CHARACTERISTICS**

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate-body leakage	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1	$\mu A$
		$V_{DS} = -24V, V_{GS} = 0V$			-100	$\mu A$
Gate-threshold voltage (note 1)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.2	-1.6	-2.5	V
Drain-source on-resistance (note 1)	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -4A$		43	55	m $\Omega$
		$V_{GS} = -4.5V, I_D = -3A$		66	80	
Forward transconductance (note 1)	$g_{FS}$	$V_{DS} = -5V, I_D = -4A$	5.5			S
<b>Dynamic characteristics (note 2)</b>						
Total Gate C harge	$Q_g$	$V_{DS} = -15V, I_D = -4A, V_{GS} = -10V$		8.2		nC
Gate-Source Charge	$Q_{gs}$			0.8		
Gate-Drain Charge	$Q_{gd}$			2.7		
Input capacitance	$C_{iss}$	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		493		pF
Output capacitance	$C_{oss}$			65		
Reverse transfer capacitance	$C_{rss}$			44		
<b>Switching characteristics</b>						
Turn-on delay time (note 2)	$t_{d(on)}$	$V_{DD} = -15V, V_{GS} = -10V,$ $I_D = -1A, R_G = 3.3\Omega$		7.2		ns
Rise time (note 2)	$t_r$			4.8		
Turn-off delay time (note 2)	$t_{d(off)}$			25		
Fall time (note 2)	$t_f$			8.5		
<b>Drain-source body diode characteristics</b>						
Source drain current(Body Diode)	$I_{SD}$				-2	A
Body diode forward voltage (note 1)	$V_{SD}$	$I_{SD} = -4A, V_{GS} = 0V$		-0.88	-1.2	V

**Notes :**

1. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle 2 %.
2. These parameters have no way to verify.

Typical Characteristics

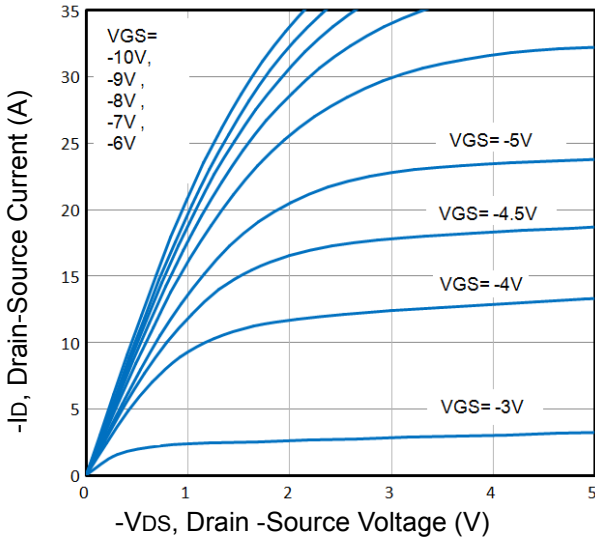


Fig1. Typical Output Characteristics

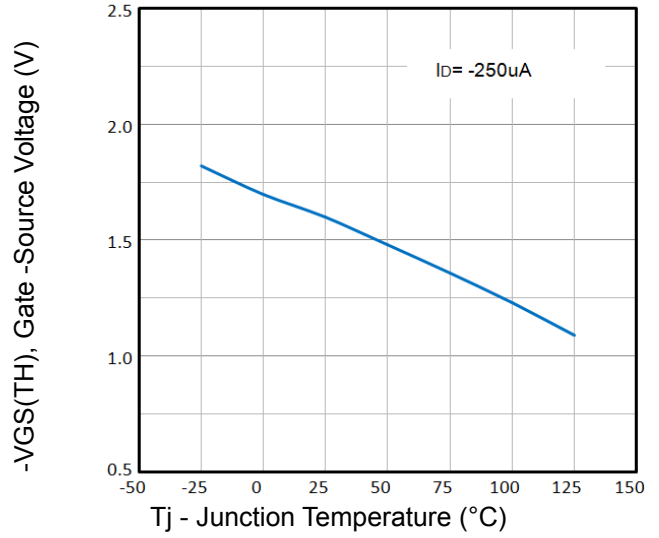


Fig2. Normalized Threshold Voltage Vs. Temperature

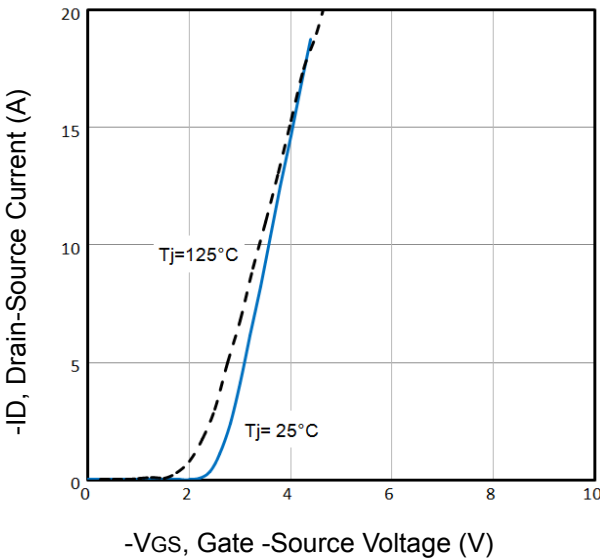


Fig3. Typical Transfer Characteristics

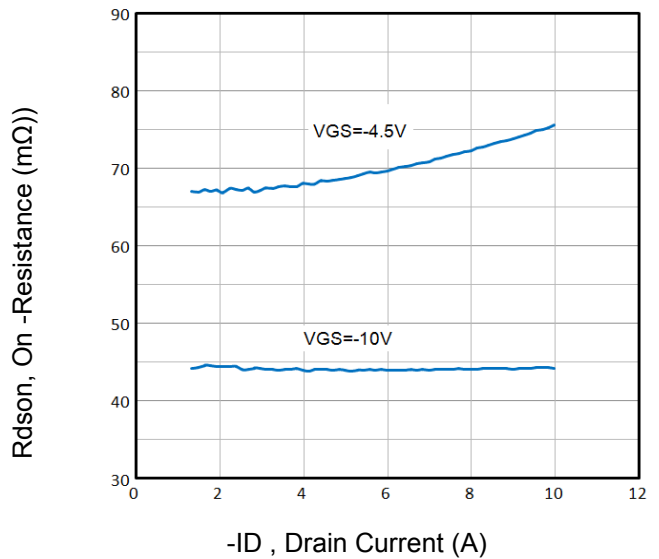


Fig4. On-Resistance vs. Drain Current and Gate

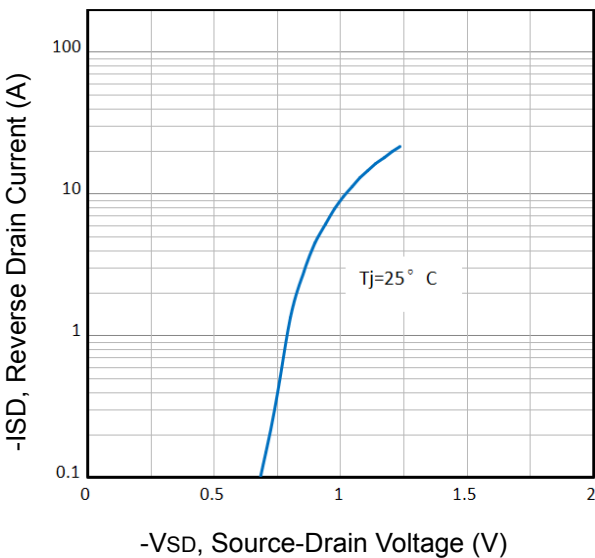


Fig5. Typical Source-Drain Diode Forward Voltage

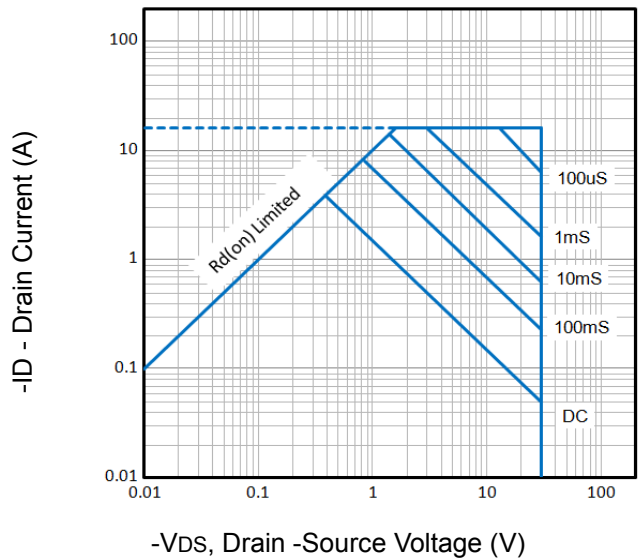


Fig6. Maximum Safe Operating Area

Typical Characteristics

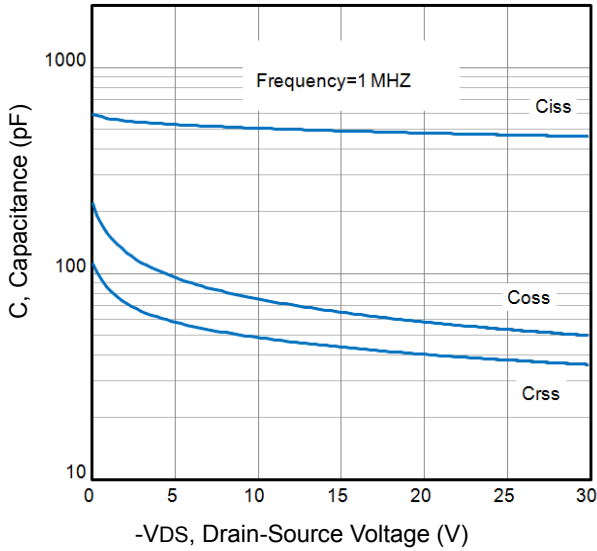


Fig7. Typical Capacitance Vs. Drain-Source Voltage

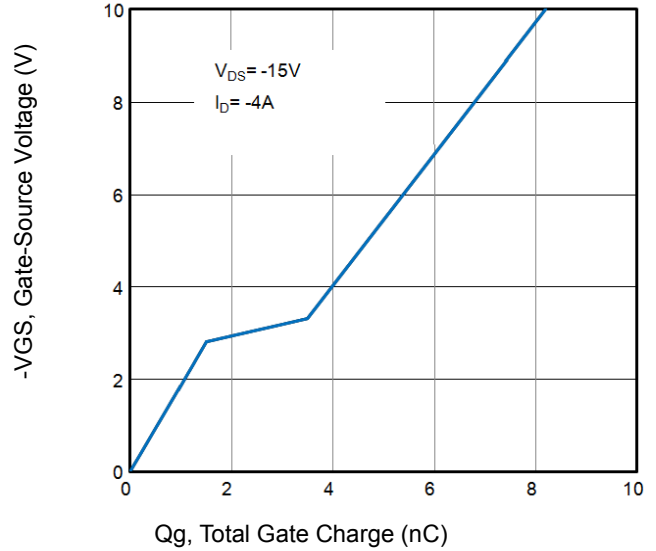


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

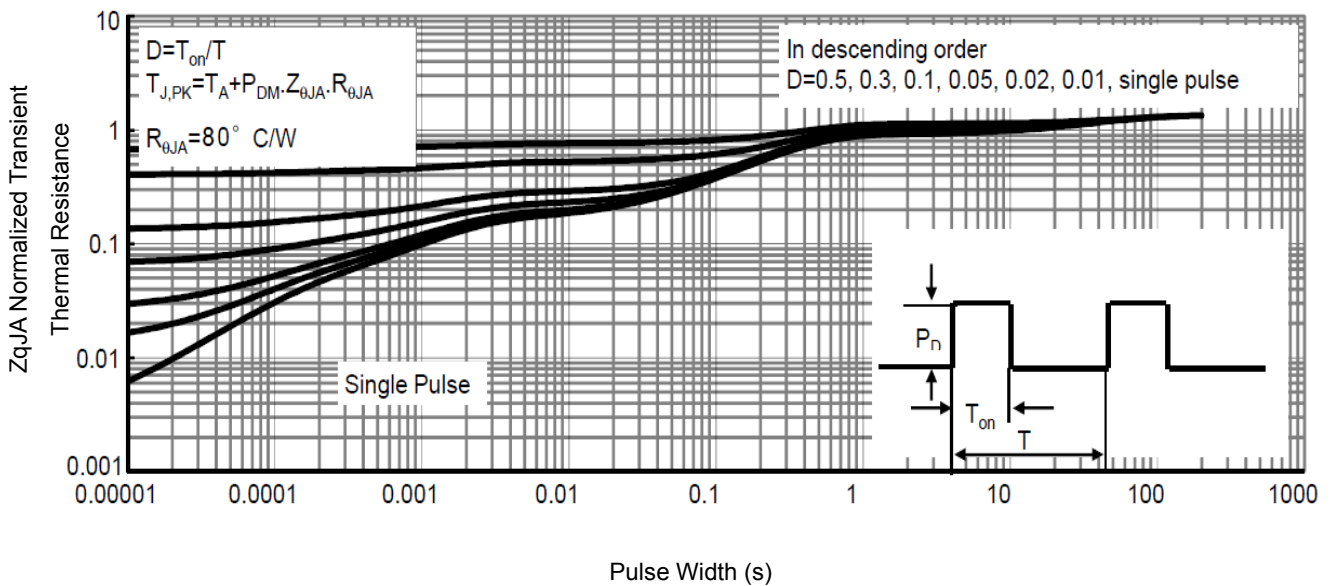


Fig9. Normalized Maximum Transient Thermal Impedance

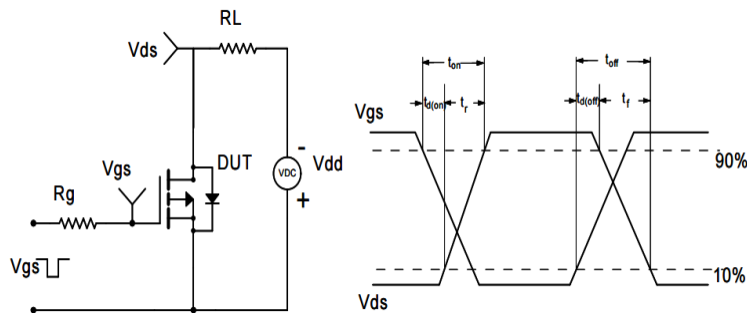
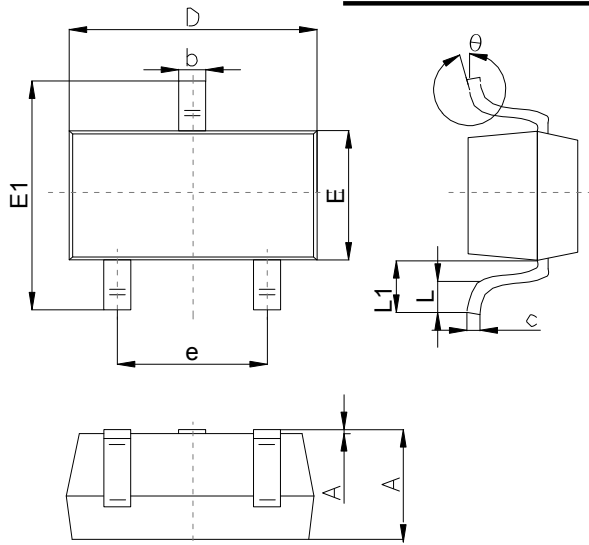


Fig10. Switching Time Test Circuit and waveforms

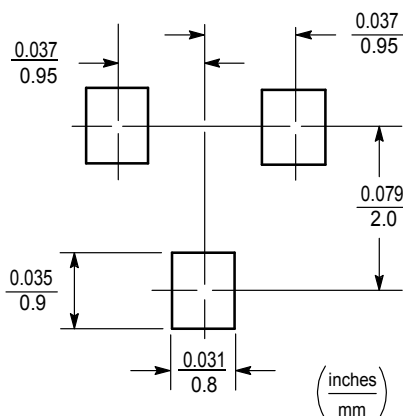
## Outline Drawing

### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	1.00		1.40
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.4		2.80
e		1.90	
L	0.10		0.30
L1	0.4		
$\theta$	0°		10°

### Suggested Pad Layout



**Note:**

1. Controlling dimension:in/millimeters. 2.General tolerance:  $\pm 0.05\text{mm}$ .
- 3.The pad layout is for reference purposes only.

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