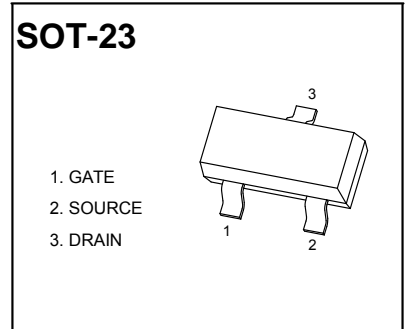


SOT-23 Plastic-Encapsulate MOSFETS
30V P-Channel Advanced Power MOSFET

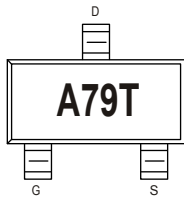
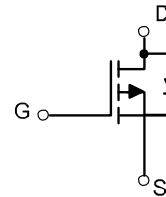
$V_{(BR)DSS}$	$R_{DS(on)Typ}$	$I_D Max$
-30V	43mΩ@ -10V	- 4.1A
	66mΩ@ -4.5V	


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 ¹⁾	I_{DM}	-16.4	A	
Maximum Power Dissipation ^{1), 2)}	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

- ¹⁾ Pulse width limited by maximum junction temperature.
²⁾ 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
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate-body leakage	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -24V, V_{GS} = 0V$			-100	μA
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 Ω
		$V_{GS} = -4.5V, I_D = -3A$		66	80	
Forward transconductance (note 1)	g_{FS}	$V_{DS} = -5V, I_D = -4A$	5.5			S
Dynamic characteristics (note 2)						
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		
Switching characteristics						
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		
Drain-source body diode characteristics						
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

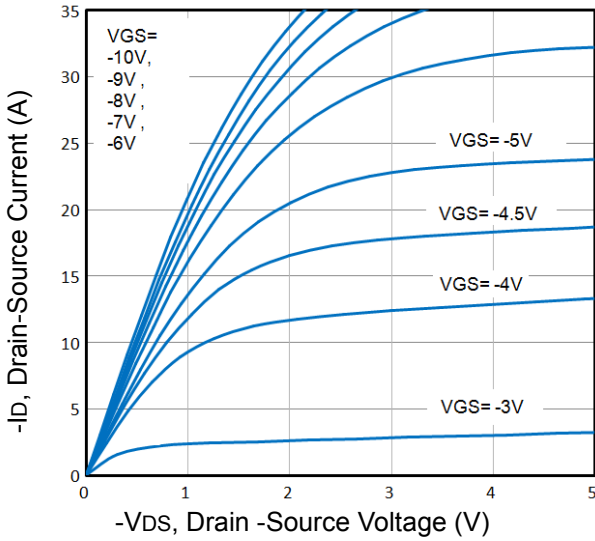


Fig1. Typical Output Characteristics

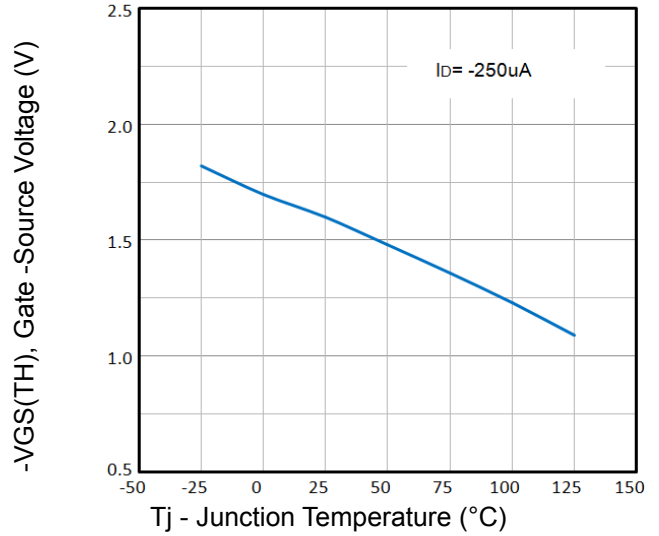


Fig2. Normalized Threshold Voltage Vs. Temperature

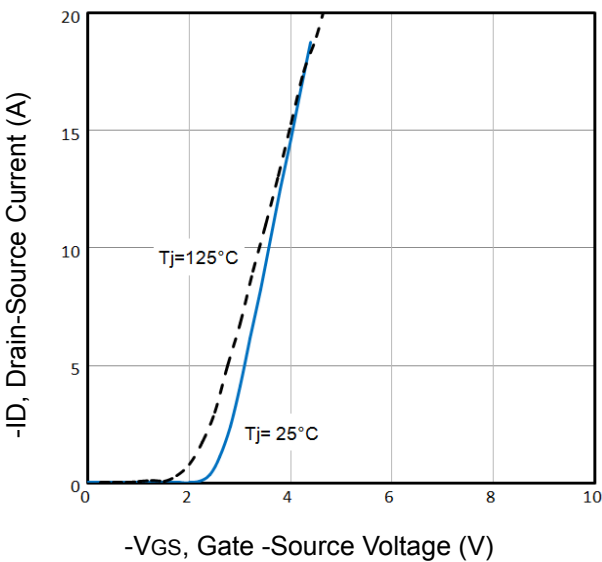


Fig3. Typical Transfer Characteristics

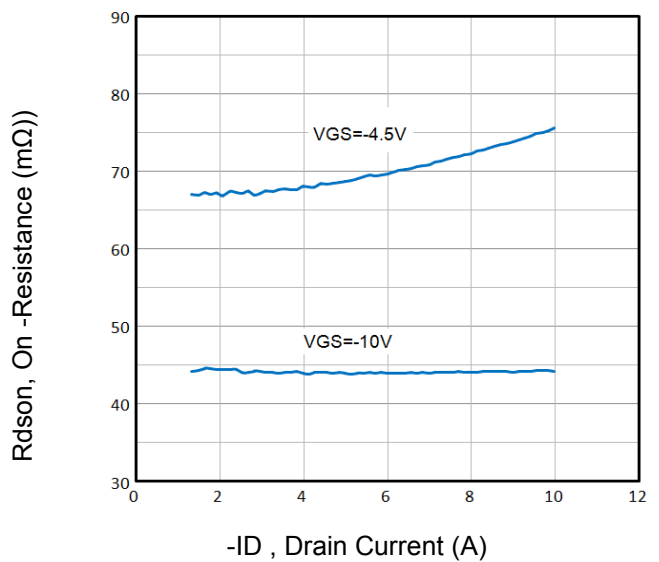


Fig4. On-Resistance vs. Drain Current and Gate

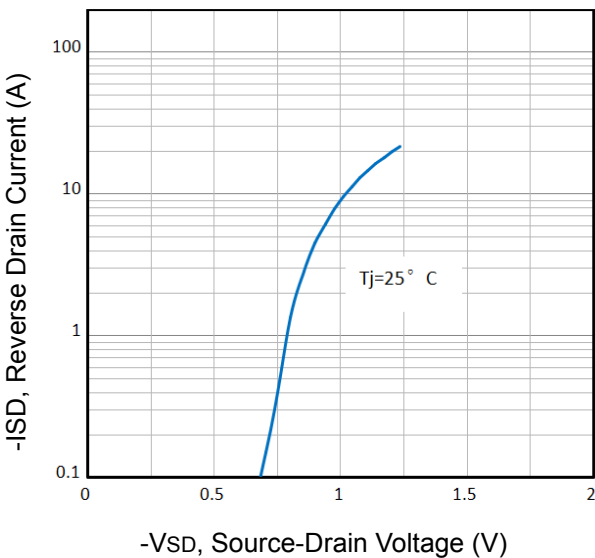


Fig5. Typical Source-Drain Diode Forward Voltage

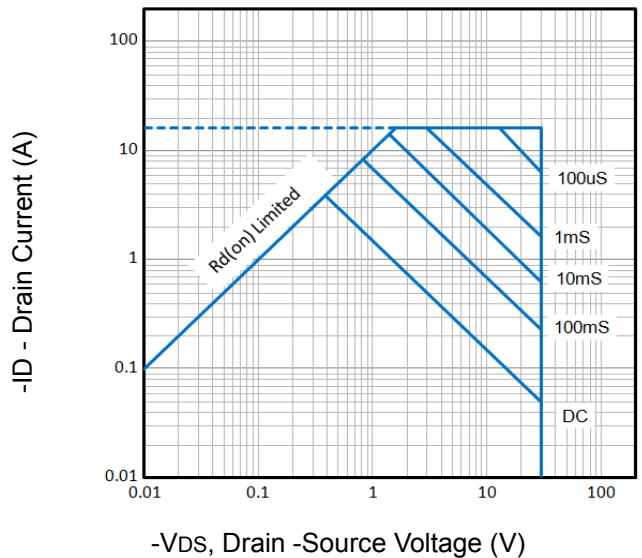


Fig6. Maximum Safe Operating Area

Typical Characteristics

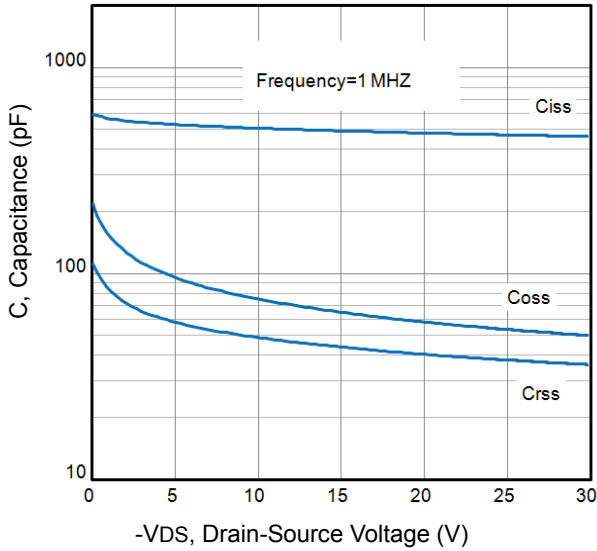


Fig7. Typical Capacitance Vs. Drain-Source Voltage

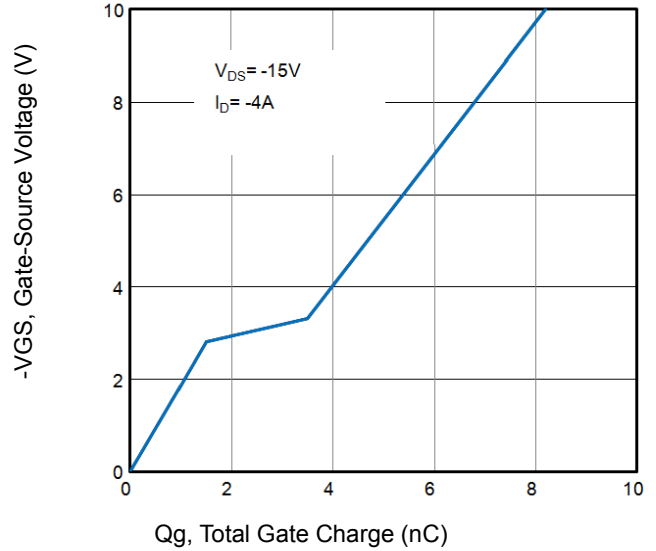


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

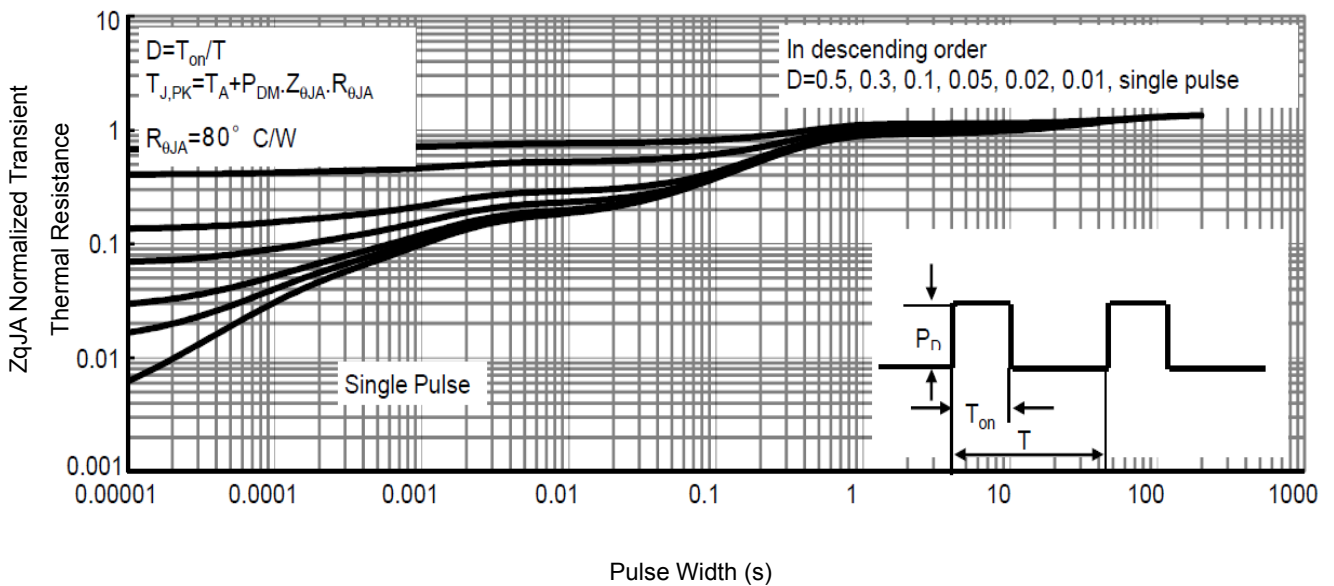


Fig9. Normalized Maximum Transient Thermal Impedance

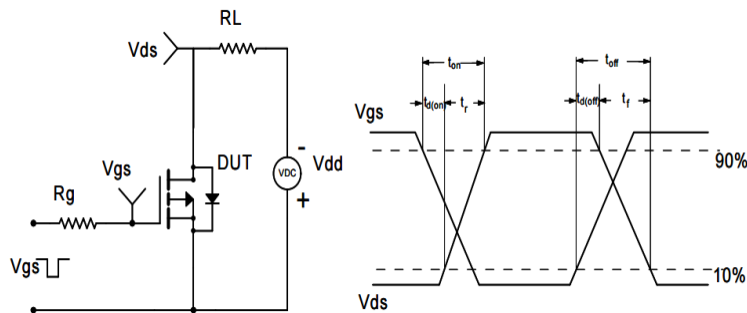
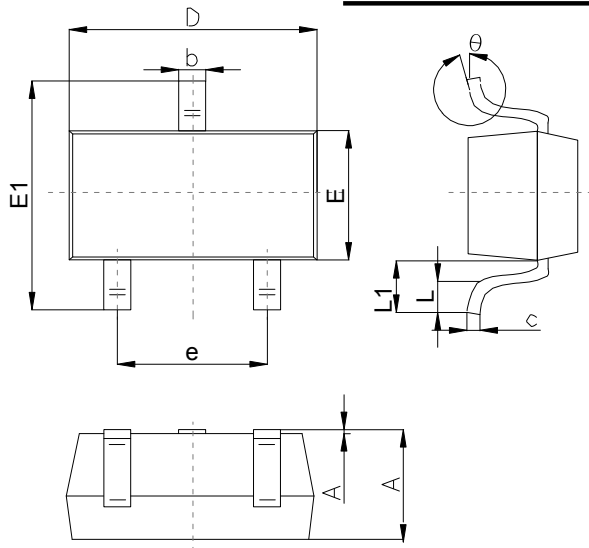
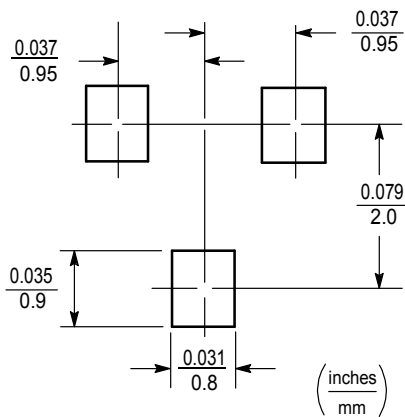


Fig10. Switching Time Test Circuit and waveforms

Outline Drawing
SOT-23 Package Outline Dimensions


Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.90		1.40
A1	0.00		0.10
b	0.30		0.50
c	0.08		0.20
D	2.80	2.90	3.10
E	1.20		1.60
E1	2.25		2.80
e	1.80	1.90	2.00
L	0.10		0.50
L1	0.4		0.55
θ	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.