

2SJ279 L , 2SJ279 S

Silicon P Channel MOS FET

Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for Switching regulator, DC – DC converter
- Avalanche Ratings

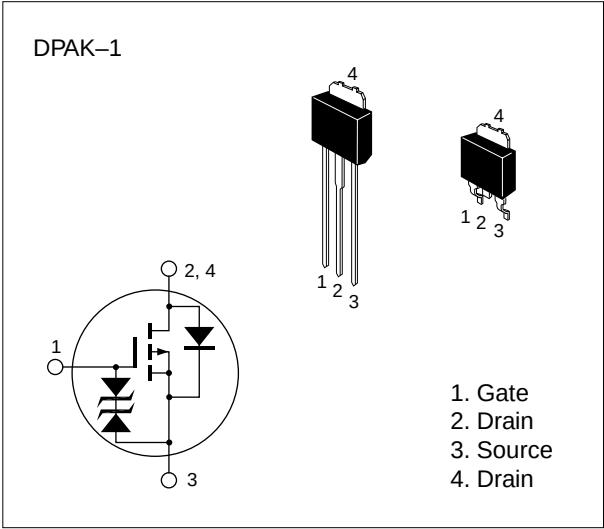


Table 1 Absolute Maximum Ratings (Ta = 25°C)

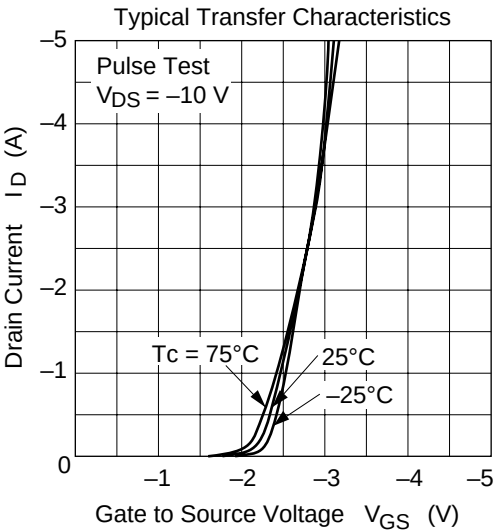
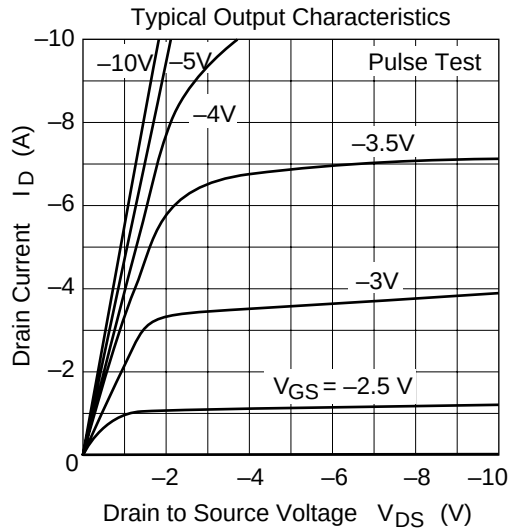
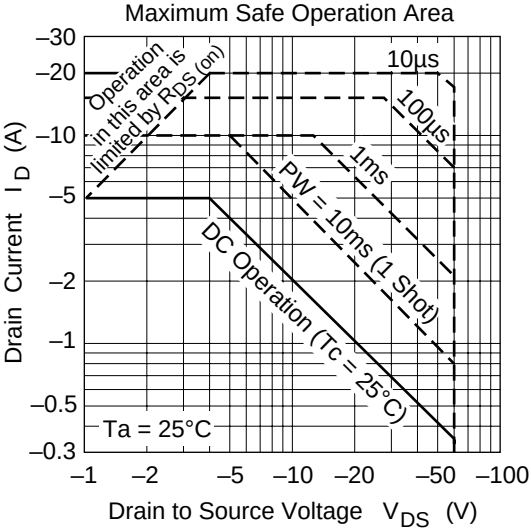
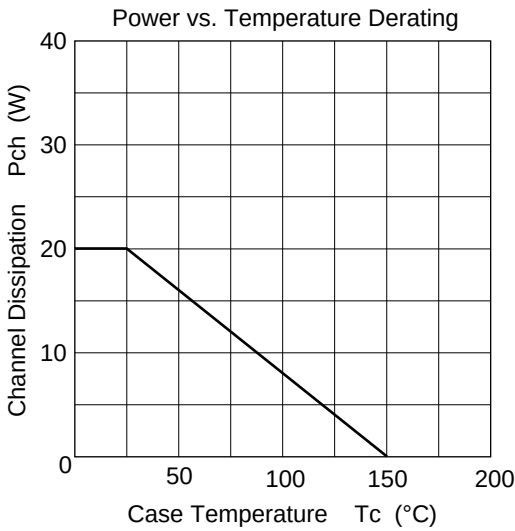
Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	–60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	–5	A
Drain peak current	I _{D(pulse)} *	–20	A
Body–drain diode reverse drain current	I _{DR}	–5	A
Avalanche current	I _{AP} ***	–5	A
Avalanche energy	E _{AR} ***	2.1	mJ
Channel dissipation	P _{ch} **	20	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	–55 to +150	°C

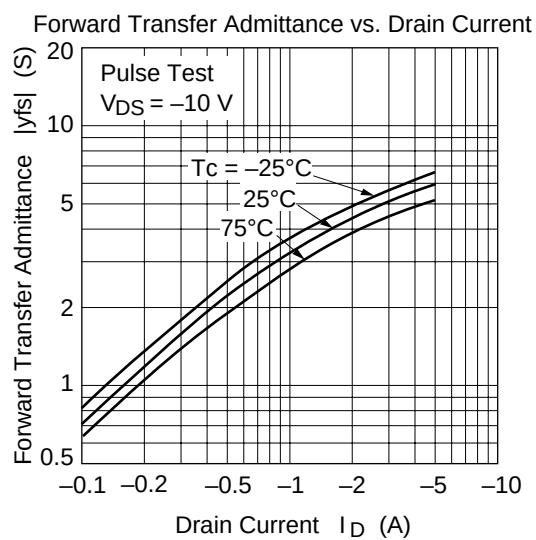
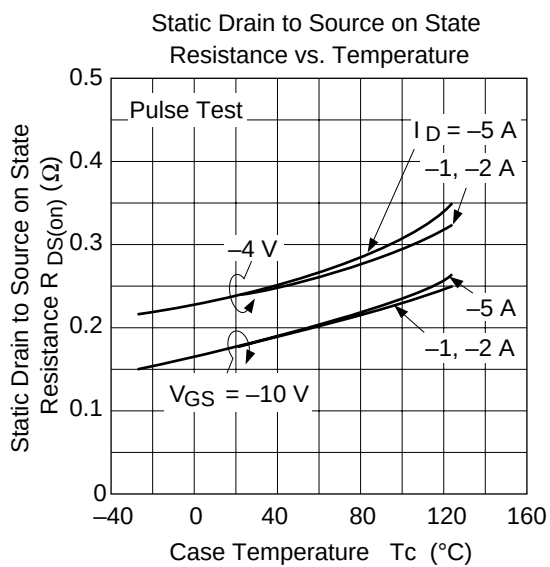
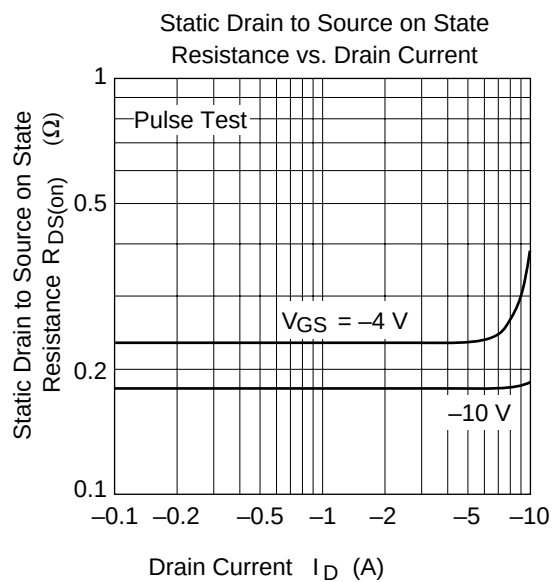
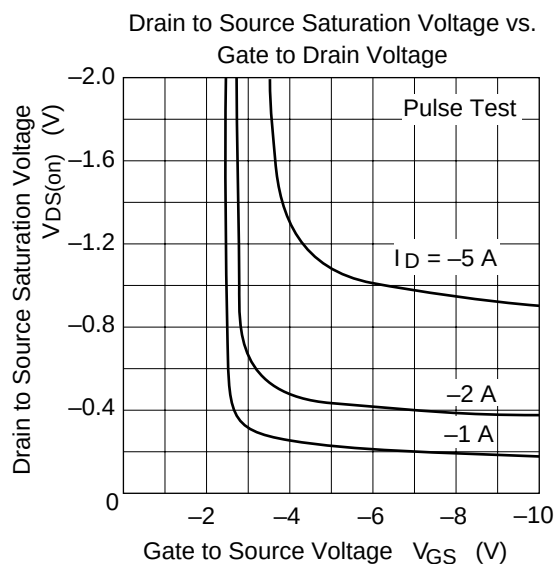
* PW ≤ 10 μs, duty cycle ≤ 1 %
** Value at Tc = 25 °C
*** Value at Tch = 25 °C, Rg ≥ 50 Ω

Table 2 Electrical Characteristics (Ta = 25°C)

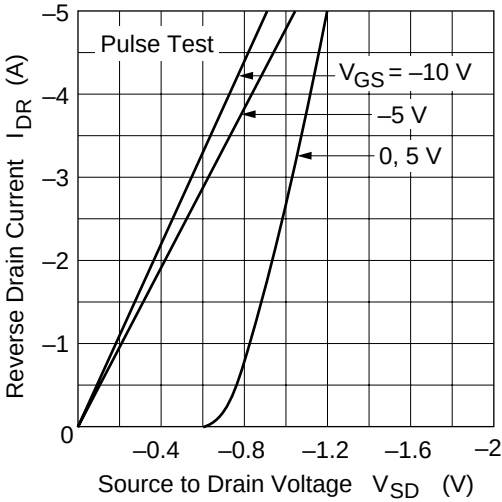
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-100	μA	$V_{DS} = -50 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.25	V	$I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.18	0.20	Ω	$I_D = -3 \text{ A}$ $V_{GS} = -10 \text{ V}^*$
		—	0.23	0.27	Ω	$I_D = -3 \text{ A}$ $V_{GS} = -4 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	3.0	5	—	S	$I_D = -3 \text{ A}$ $V_{DS} = -10 \text{ V}^*$
Input capacitance	C_{iss}	—	690	—	pF	$V_{DS} = -10 \text{ V}$
Output capacitance	C_{oss}	—	340	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	110	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = -3 \text{ A}$
Rise time	t_r	—	35	—	ns	$V_{GS} = -10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	125	—	ns	$R_L = 10 \text{ }\Omega$
Fall time	t_f	—	75	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.2	—	V	$I_F = -5 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	140	—	μs	$I_F = -5 \text{ A}$, $V_{GS} = 0$, $diF / dt = 50 \text{ A} / \mu\text{s}$

* Pulse Test

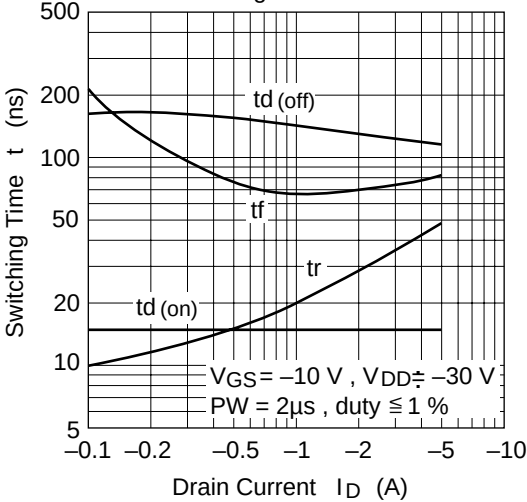




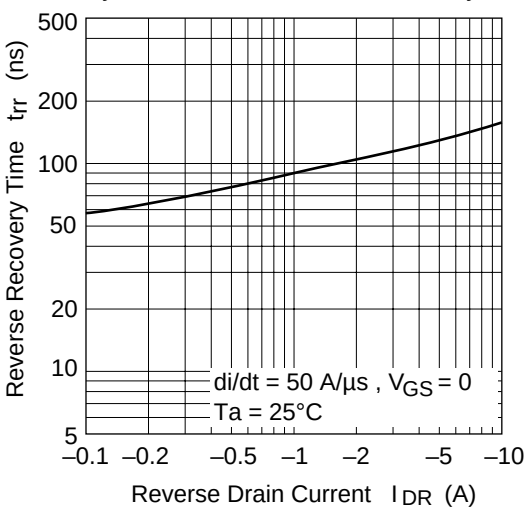
Reverse Drain Current vs. Source to Drain Voltage



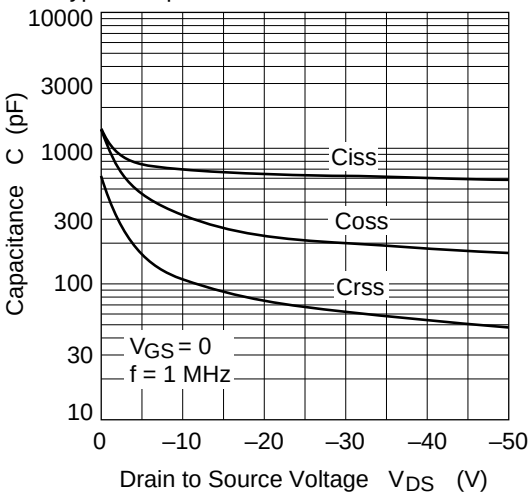
Switching Characteristics

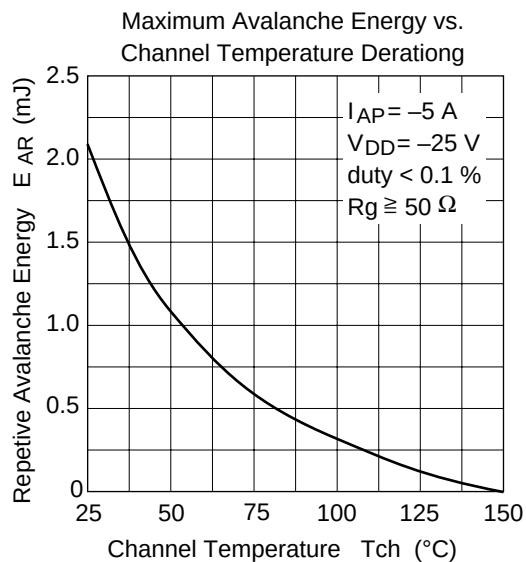
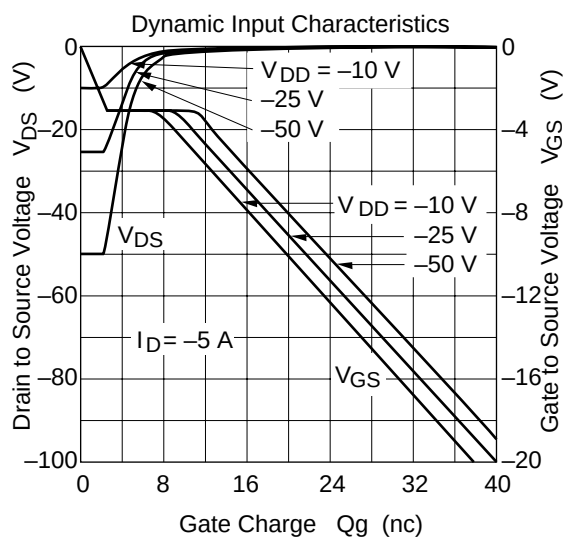


Body to Drain Diode Reverse Recovery Time

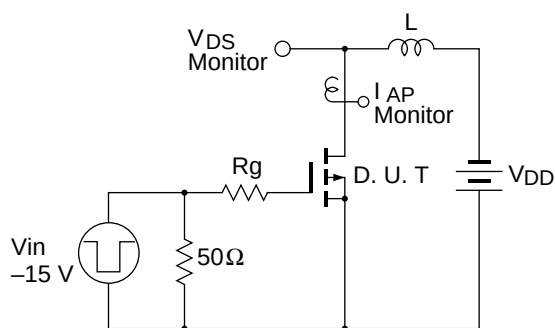


Typical Capacitance vs. Drain to Source Voltage

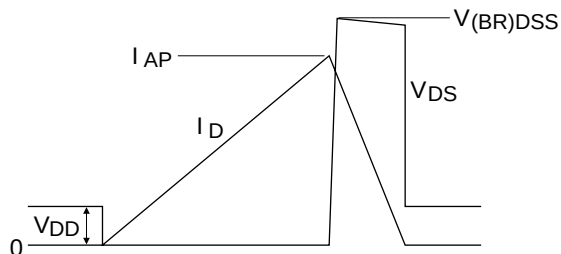


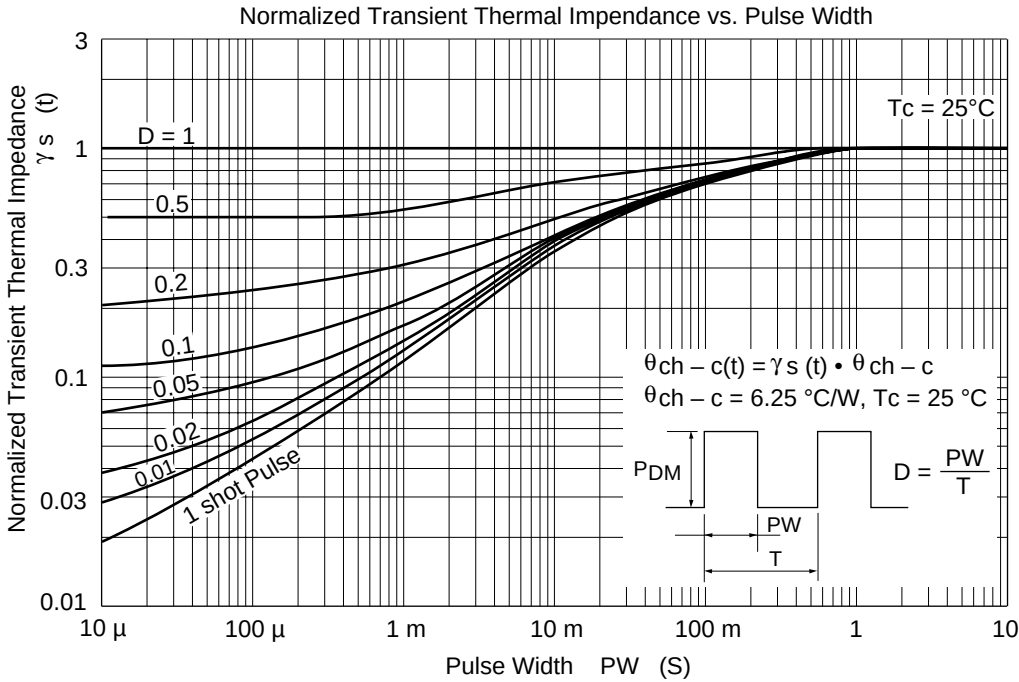


Avalanche Test Circuit and Waveform



$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$





Switching Time Test Circuit and Waveform

