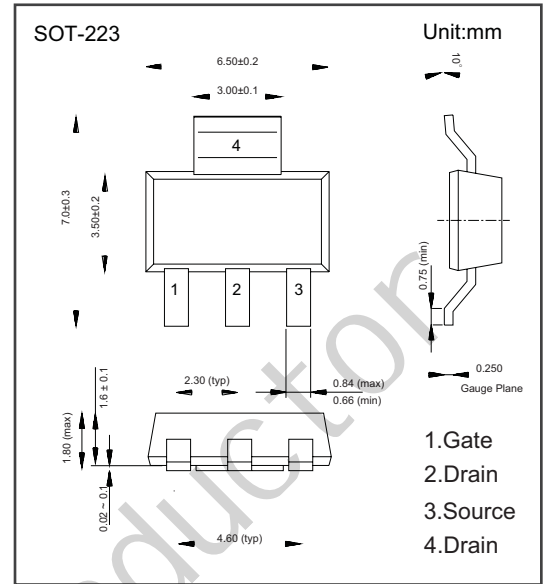
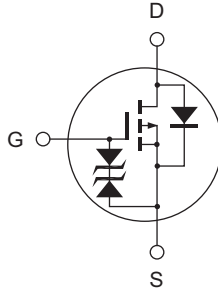


### Features

- 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



### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V <sub>DSS</sub>	-60	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	-3	A
Drain peak current	I <sub>D (pulse)</sub>	-4	A
Body to drain diode reverse drain current	I <sub>DR</sub>	-1	A
Channel dissipation	P <sub>ch</sub>	1	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

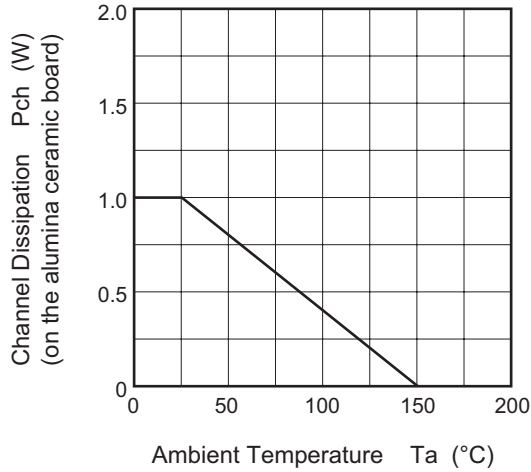
### Electrical Characteristics

(Ta = 25°C)

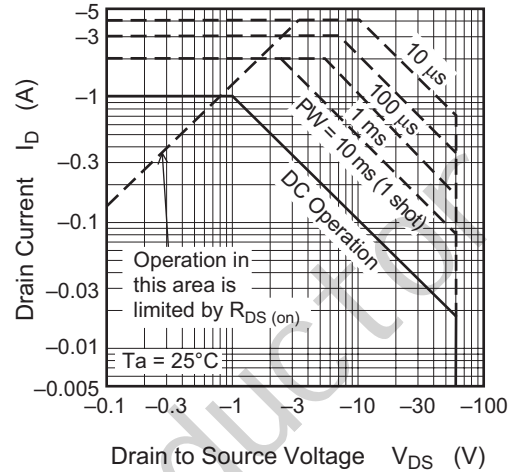
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	-60	—	—	V	I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR) GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±5	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-10	μA	V <sub>DS</sub> = -50 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	-1.0	—	-2.25	V	I <sub>D</sub> = -1 mA, V <sub>DS</sub> = -10 V
Static drain to source on state resistance	R <sub>DS (on)</sub>	—	0.15	0.17	Ω	I <sub>D</sub> = -0.5 A, V <sub>GS</sub> = -10 V <sup>Note 3</sup>
	R <sub>DS (on)</sub>	—	0.19	0.2	Ω	I <sub>D</sub> = -0.5 A, V <sub>GS</sub> = -4 V <sup>Note 3</sup>
Forward transfer admittance	y <sub>fs</sub>	0.6	1.0	—	S	I <sub>D</sub> = -0.5 A, V <sub>DS</sub> = -10 V <sup>Note 3</sup>
Input capacitance	C <sub>iss</sub>	—	160	—	pF	V <sub>DS</sub> = -10 V
Output capacitance	C <sub>oss</sub>	—	80	—	pF	V <sub>GS</sub> = 0
Reverse transfer capacitance	C <sub>rss</sub>	—	28	—	pF	f = 1 MHz
Turn-on delay time	t <sub>d (on)</sub>	—	7	—	ns	I <sub>D</sub> = -0.5 A
Rise time	t <sub>r</sub>	—	8	—	ns	V <sub>GS</sub> = -10 V
Turn-off delay time	t <sub>d (off)</sub>	—	30	—	ns	R <sub>L</sub> = 60 Ω
Fall time	t <sub>f</sub>	—	25	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	-1.1	—	V	I <sub>F</sub> = -1 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	90	—	ns	I <sub>F</sub> = -1 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 50 A/μs

**Main Characteristics**

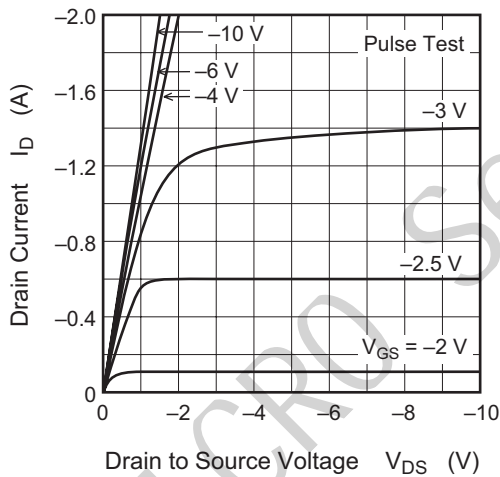
Power vs. Temperature Derating



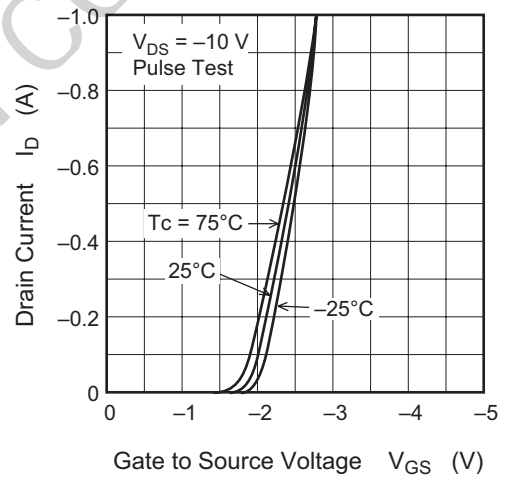
Maximum Safe Operation Area



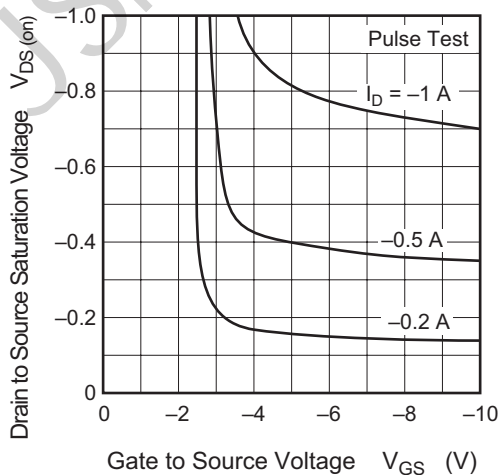
Typical Output Characteristics



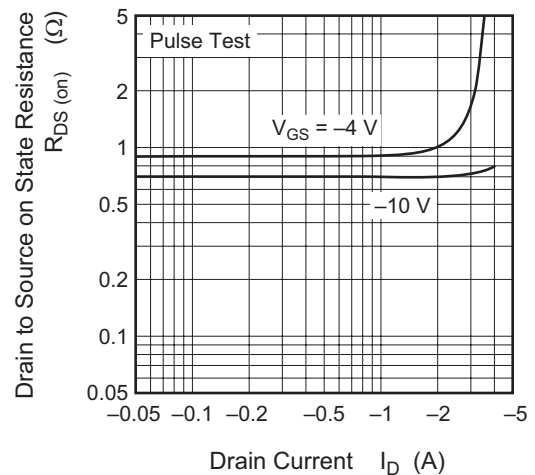
Typical Transfer Characteristics

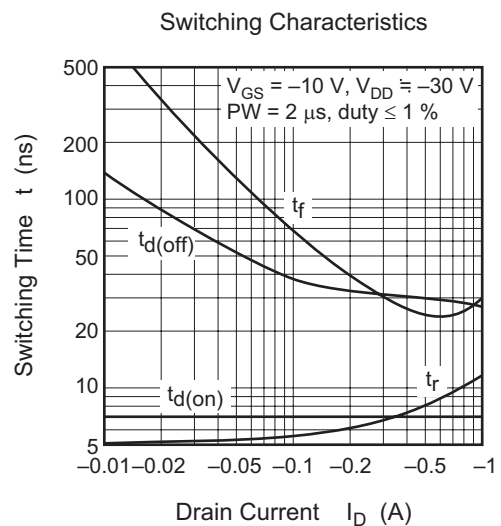
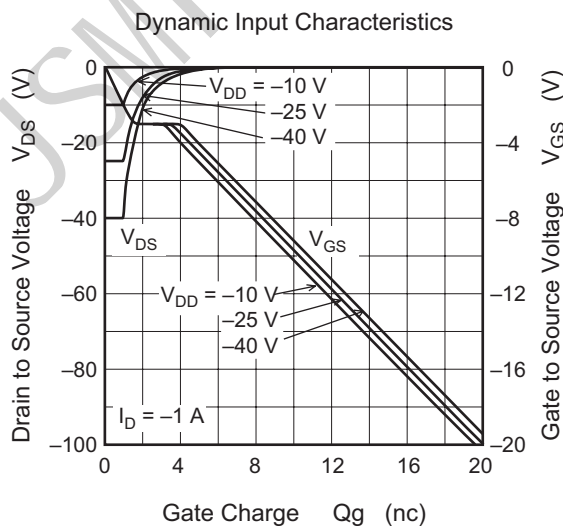
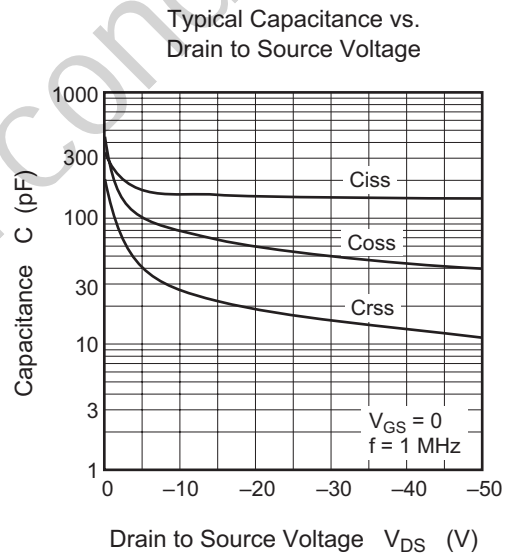
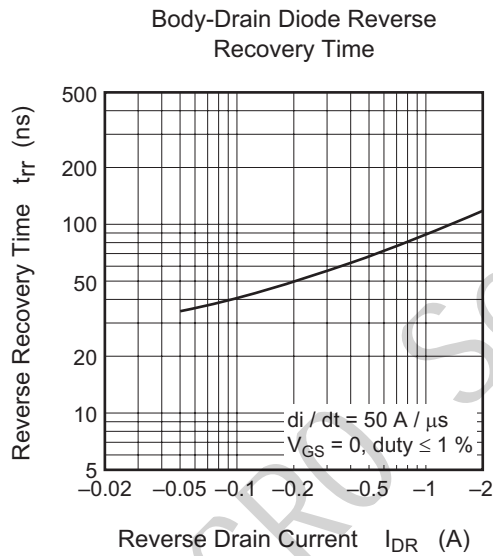
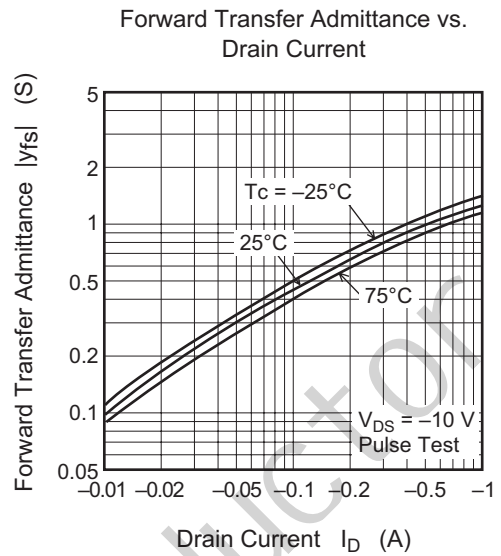
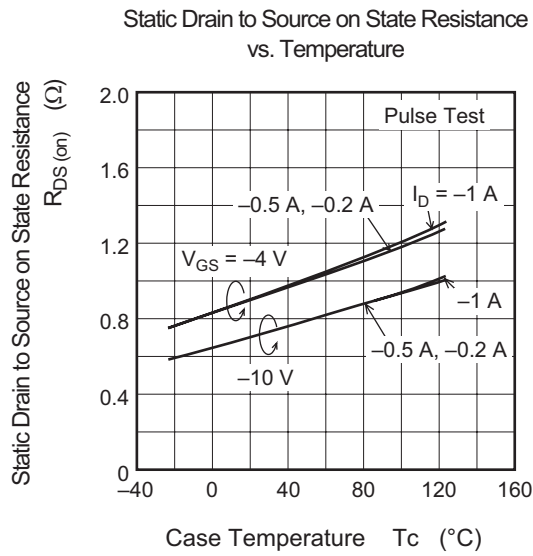


Drain to Source Saturation Voltage vs. Gate to Source Voltage

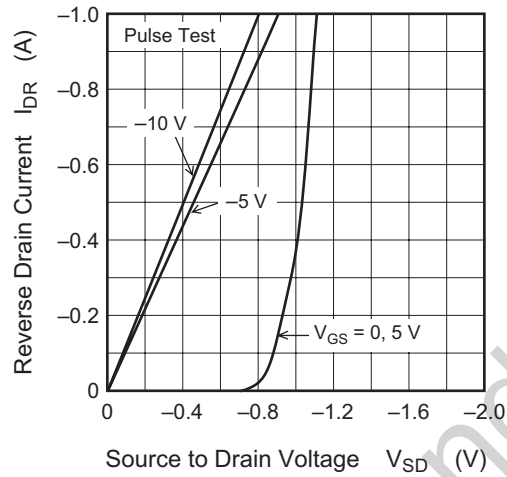


Static Drain to Source on State Resistance vs. Drain Current

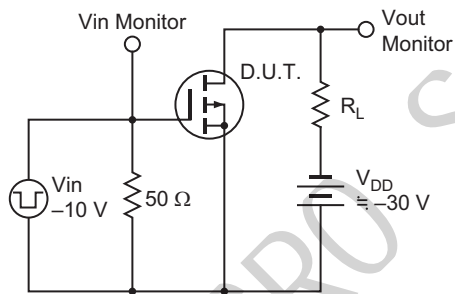




Reverse Drain Current vs.  
Source to Drain Voltage



Switching Time Test Circuit



Waveform

