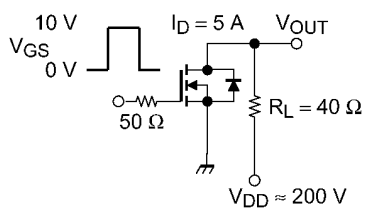
6. Electrical Characteristics (T_a = 25°C unless otherwise specified)

6.1. Static Characteristics

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	V_{GS} = ±30 V, V_{DS} = 0 V	—	—	±1	μA
Drain cut-off current	I_{DSS}	V_{DS} = 600 V, V_{GS} = 0 V	—	—	10	
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D = 10 mA, V_{GS} = 0 V	600	—	—	V
Gate threshold voltage	V_{th}	V_{DS} = 10 V, I_D = 1 mA	2.5	—	4.5	
Drain-source on-resistance	$R_{DS(ON)}$	V_{GS} = 10 V, I_D = 5 A	—	0.8	1.05	Ω
Forward transfer admittance	$\|Y_{fs}\|$	V_{DS} = 10 V, I_D = 5 A	1.5	6.0	—	S

6.2. Dynamic Characteristics

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Input capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	—	1350	—	pF
Reverse transfer capacitance	C_{rss}		—	15	—	
Output capacitance	C_{oss}		—	135	—	
Switching time (rise time)	t_r	See Figure 6.2.1.	—	22	—	ns
Switching time (turn-on time)	t_{on}		—	55	—	
Switching time (fall time)	t_f		—	15	—	
Switching time (turn-off time)	t_{off}		—	100	—	



Duty ≤ 1%, t_w = 10 μs

Fig. 6.2.1 Switching Time Test Circuit

6.3. Gate Charge Characteristics

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Total gate charge (gate-source plus gate-drain)	Q_g	V_{DD} ≈ 400 V, V_{GS} = 10 V, I_D = 10 A	—	25	—	nC
Gate-source charge	Q_{gs}		—	16	—	
Gate-drain charge	Q_{gd}		—	9	—	

MOSFETs Silicon N-Channel MOS (π-MOSⅦ)

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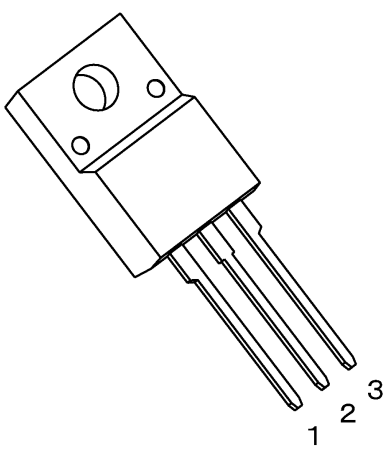
1. Applications

- Switching Voltage Regulators

2. Features

(1) Fast reverse recovery time: t_{rrf} = 50 ns (typ.), t_{rr} = 90 ns (typ.)
(2) Low drain-source on-resistance: $R_{DS(ON)}$ = 0.8 Ω (typ.)
(3) High forward transfer admittance: $|Y_{fs}|$ = 6.0 S (typ.)
(4) Low leakage current: I_{DSS} = 10 μA (max) (V_{DS} = 600 V)
(5) Enhancement mode: V_{th} = 2.5 to 4.5 V (V_{DS} = 10 V, I_D = 1 mA)

3. Packaging and Internal Circuit



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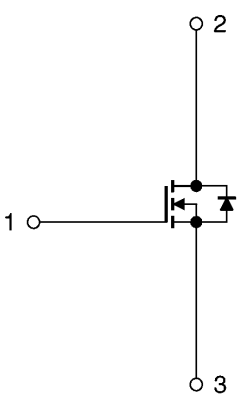

1: Gate
2: Drain
3: Source

4. Absolute Maximum Ratings (Note) (T_a = 25°C unless otherwise specified)

Characteristics			Symbol	Rating	Unit
Drain-source voltage			V_{DSS}	600	V
Gate-source voltage			V_{GSS}	±30	
Drain current (DC)		(Note 1)	I_D	10	A
Drain current (pulsed)	(t = 1 ms)	(Note 1)	I_{DP}	40	
Power dissipation	(T_c = 25°C)		P_D	45	W
Single-pulse avalanche energy		(Note 2)	E_{AS}	364	mJ
Avalanche current			I_{AR}	10	A
Repetitive avalanche energy		(Note 3)	E_{AR}	4.5	mJ
Channel temperature			T_{ch}	150	°C
Storage temperature			T_{stg}	-55 to 150	