

PUB4753 (PU7457)

Silicon N-Channel Power F-MOS FET (with built-in zener diode)

■ Features

- High avalanche energy capacity
- High electrostatic breakdown voltage
- No secondary breakdown
- High breakdown voltage, large allowable power dissipation
- Allowing Low-voltage drive

■ Applications

- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

■ Absolute Maximum Ratings (T_C = 25°C)

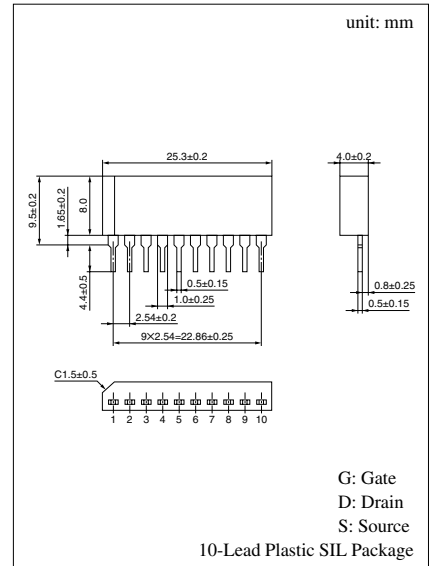
Parameter	Symbol	Ratings	Unit
Drain to Source breakdown voltage	V _{DSS}	100 ± 15	V
Gate to Source voltage	V _{GSS}	±20	V
Drain current	DC	I _D	±3 A
	Pulse	I _{DP}	±9 A
Avalanche energy capacity	Non repetition	EAS*	22.5 mJ
Allowable power dissipation	T _C = 25°C	P _D	15 W
	T _a = 25°C		3.5 W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

* L = 5mH, I_L = 3A, 1 pulse

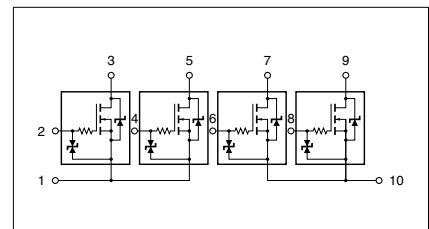
■ Electrical Characteristics (T_C = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0			10	μA
Gate to Source leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0			±10	μA
Drain to Source breakdown voltage	V _{DSS}	I _D = 1mA, V _{GS} = 0	85		115	V
Gate threshold voltage	V _{th}	V _{DS} = 10V, I _D = 1mA	1		2.5	V
Drain to Source ON-resistance	R _{DS(on)1}	V _{GS} = 10V, I _D = 2A		300	450	mΩ
	R _{DS(on)2}	V _{GS} = 4V, I _D = 2A		400	600	mΩ
Forward transfer admittance	Y _{fs}	V _{DS} = 10V, I _D = 2A	2.5	4		S
Diode forward voltage	V _{DSF}	I _{DR} = 3A, V _{GS} = 0			-1.6	V
Input capacitance (Common Source)	C _{iss}	V _{DS} = 10V, V _{GS} = 0, f = 1MHz		130		pF
Output capacitance (Common Source)	C _{oss}			160		pF
Reverse transfer capacitance (Common Source)	C _{rss}			25		pF
Turn-on time	t _{on}	V _{GS} = 10V, I _D = 2A V _{DD} = 50V, R _L = 25Ω		0.2		μs
Fall time	t _f			0.3		μs
Turn-off time (delay time)	t _{d(off)}			1.5		μs

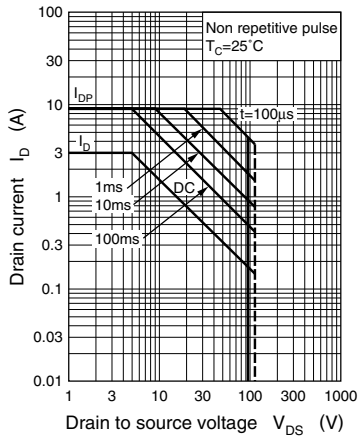
Note) The part number in the parenthesis shows conventional part number.



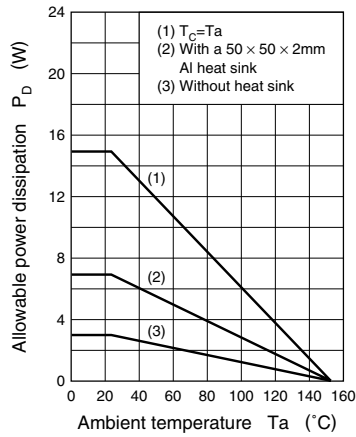
Internal Connection



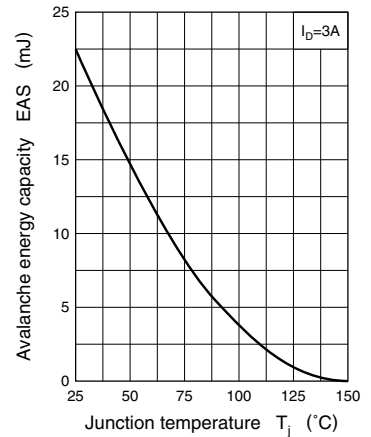
Area of safe operation (ASO)



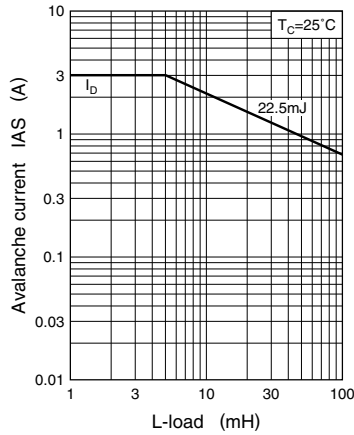
$P_D - T_a$



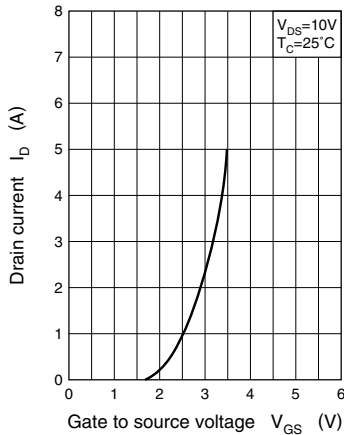
EAS — T_j



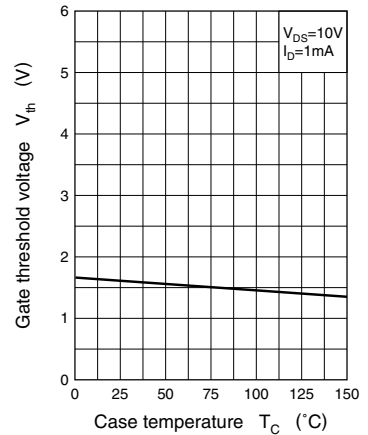
IAS — L-load



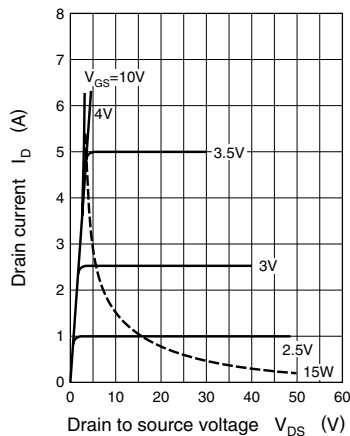
$I_D - V_{GS}$



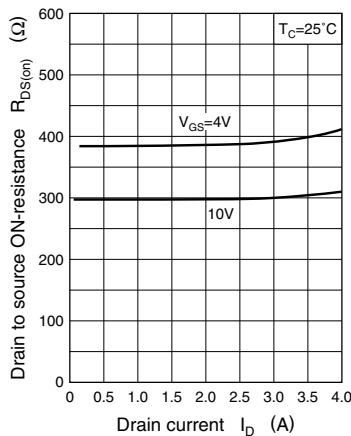
$V_{th} - T_C$



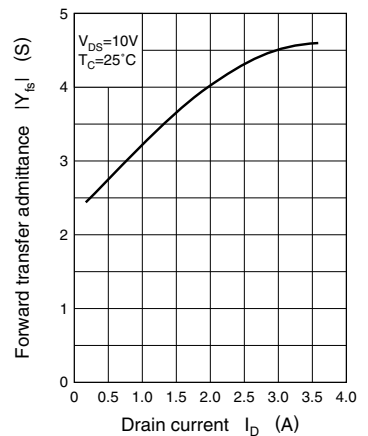
$I_D - V_{DS}$

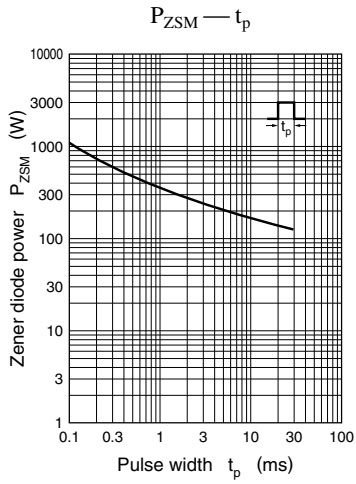
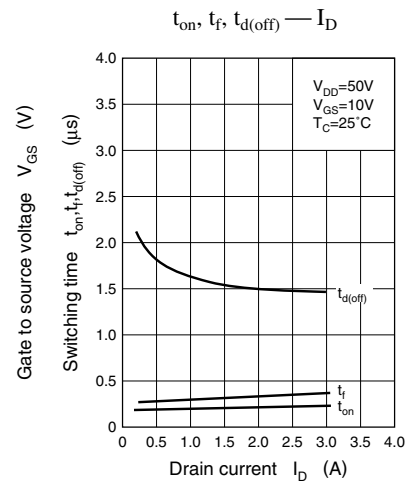
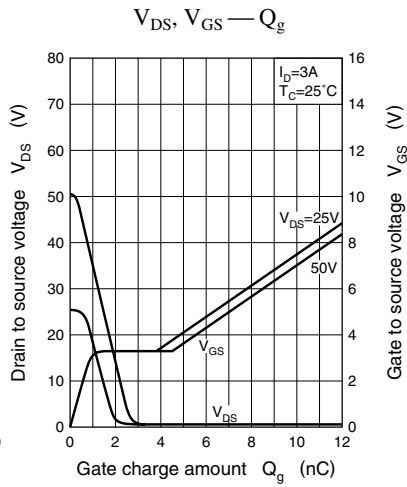
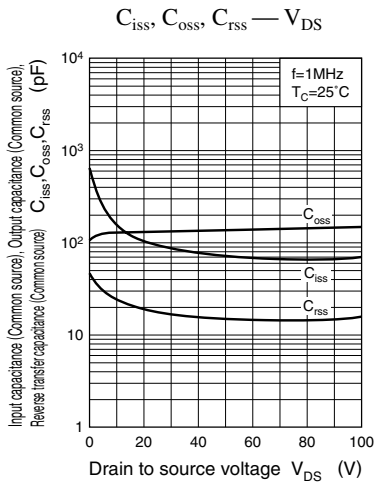


$R_{DS(on)} - I_D$



$|Y_{fs}| - I_D$





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