PU7456

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

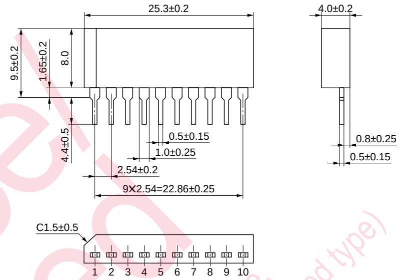
■ Features

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

■ Applications

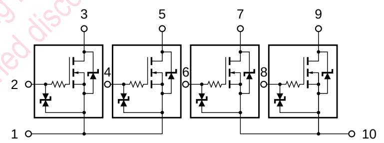
- Contactless relay
- Diving circuit for a solenoid
- Driving circuit for a motor
- Control equipment
- Switching power supply

unit: mm



G: Gate
D: Drain
S: Source
10-Lead Plastic SIL Package

Internal Connection



■ Absolute Maximum Ratings (T_C = 25°C)

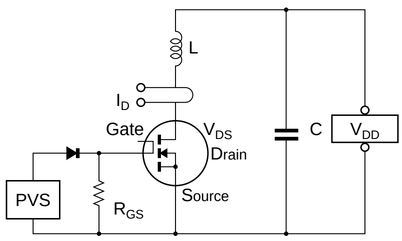
Parameter		Symbol	Ratings	Unit
Drain to Source breakdown voltage		V_{DSS}	35 ± 10	V
Gate to Source voltage		V_{GSS}	±20	V
Drain current	DC	I_D	±6	A
	Pulse	I_{DP}	±12	A
Avalanche energy capacity	Non repetition	EAS*	200	mJ
	Repetition	EAR	8	mJ
Allowable power dissipation	T_C = 25°C	P_D	15	W
	Ta = 25°C		3.5	
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	–55 to +150	°C

* L = 11.2mH, I_L = 6A, V_{DD} = 50V, 1 pulse

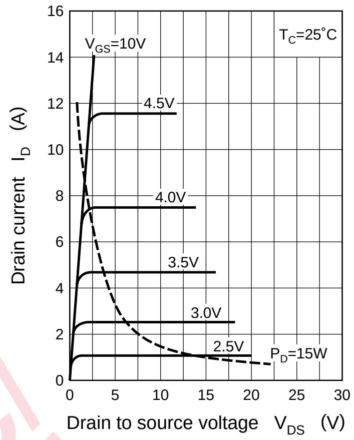
■ Electrical Characteristics (T_C = 25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Drain to Source cut-off current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0			10	µA
Gate to Source leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0			±1	µA
Drain to Source breakdown voltage	V_{DSS}	I_D = 1mA, V_{GS} = 0	25		45	V
Gate threshold voltage	V_{th}	V_{DS} = 25V, I_D = 1mA	1		2.5	V
Drain to Source ON-resistance	$R_{DS(on)1}$	V_{GS} = 10V, I_D = 3A		110	140	mΩ
	$R_{DS(on)2}$	V_{GS} = 4V, I_D = 3A		160	220	mΩ
Forward transfer admittance	$\|Y_{fs}\|$	V_{DS} = 25V, I_D = 3A	3	5.5		S
Diode forward voltage	V_{DSF}	I_{DR} = 6A, V_{GS} = 0			–1.7	V
Input capacitance (Common Source)	C_{iss}	V_{DS} = 10V, V_{GS} = 0, f = 1MHz		40		pF
Output capacitance (Common Source)	C_{oss}			300		pF
Reverse transfer capacitance (Common Source)	C_{rss}			20		pF
Turn-on time	t_{on}	V_{GS} = 10V, I_D = 3A, V_{DD} = 30V, R_L = 10Ω		1		µs
Fall time	t_f			2		µs
Turn-off time (delay time)	$t_{d(off)}$			1		µs

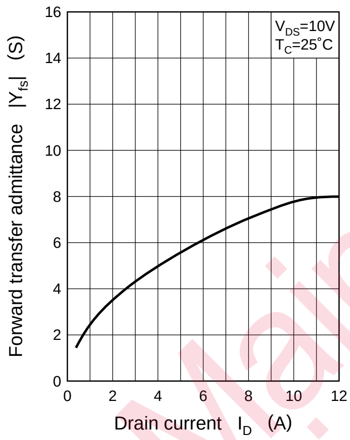
Avalanche energy capacity test circuit



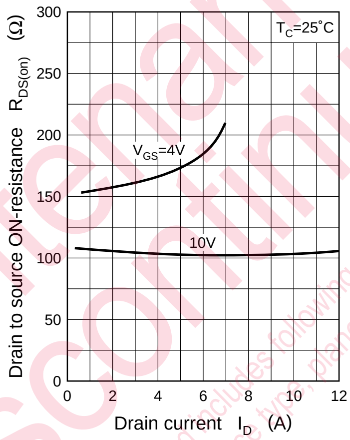
I_D — V_{DS}



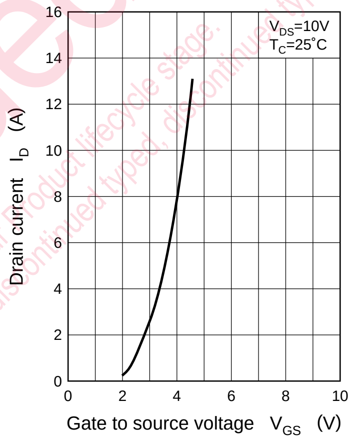
| Y_{fs} | — I_D



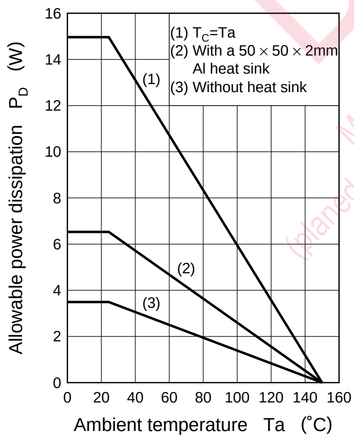
$R_{DS(on)}$ — I_D



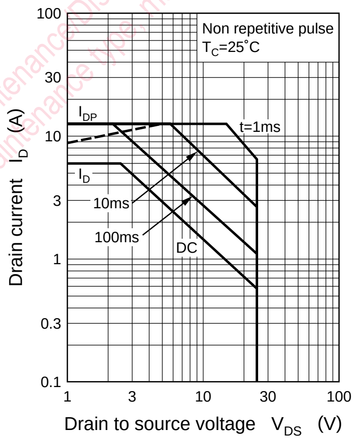
I_D — V_{GS}



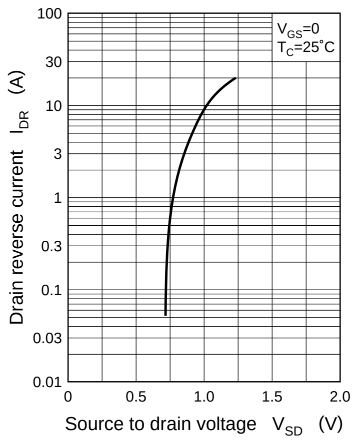
P_D — Ta



Area of safe operation (ASO)



I_{DR} — V_{SD}



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