

PU61C56

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

■ Features

- Avalanche energy capability guaranteed
- Withstanding high electrostatic voltage
- Low-voltage drive possible

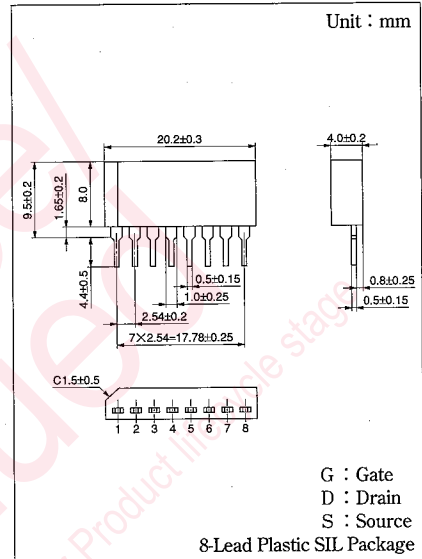
■ Applications

- Non-contact relay
- Solenoid drive
- Motor drive
- Control equipment
- Switching mode regulator

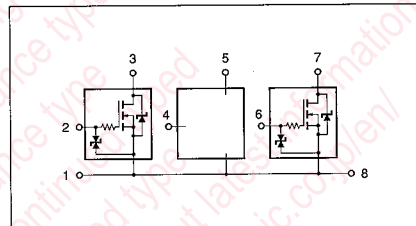
■ Absolute Maximum Ratings (T_C=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source breakdown voltage	V _{DSS}	37±7	V
Gate-Source voltage	V _{GSS}	±20	V
Drain current	DC	I _D	±6 A
	Pulse	I _{DP}	±12 A
Avalanche energy capability	EAS*	200	mJ
Allowable power dissipation	T _C =25°C	P _D	15 W
	T _a =25°C		2.4 W
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



■ Internal Connection

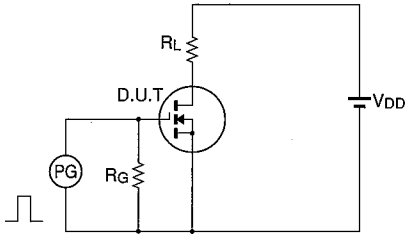


Power Tr. Arrays

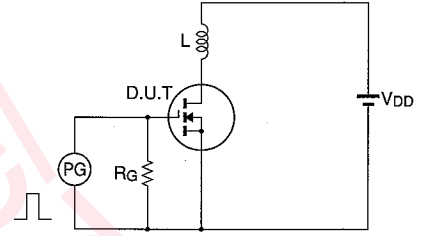
■ Electrical Characteristics (T_C=25°C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source cut-off current	I _{DSS}	V _{DS} =25V, V _{GS} =0			10	μA
Gate-Source leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0			10	μA
Drain-Source breakdown voltage	V _{DSS}	I _D =1mA, V _{GS} =0	30		44	V
Gate threshold voltage	V _{th}	V _{DS} =10V, I _D =1mA	1.2		2.5	V
Drain-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 transadmittance	Y _{fs}	V _{DS} =10V, I _D =3A	2.5	4		S
Diode forward voltage	V _{D5F}	I _{DR} =6A, V _{GS} =0			-1.7	V
Input capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0, f=1MHz		40		pF
Output capacitance	C _{oss}				300	pF
Feedback capacitance	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
Channel-Case heat resistance	R _{th(ch-c)}				8.33	°C/W

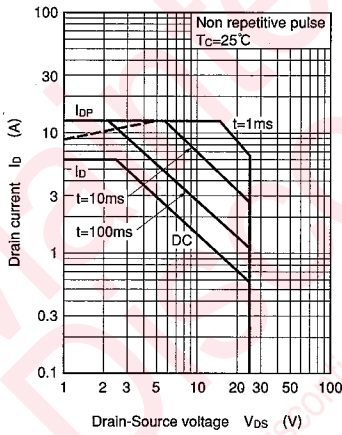
Switching measurement circuit



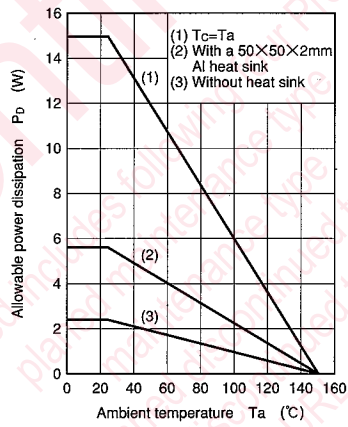
Avalanche capability test circuit



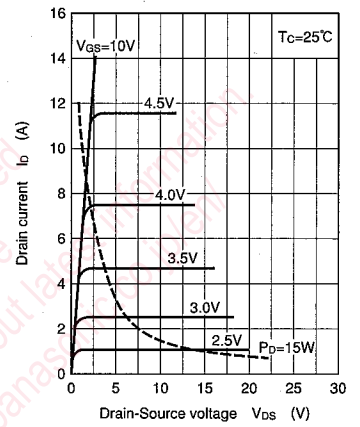
Area of safe operation (ASO)



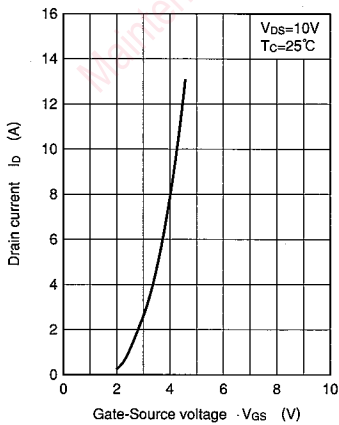
$P_D - T_a$



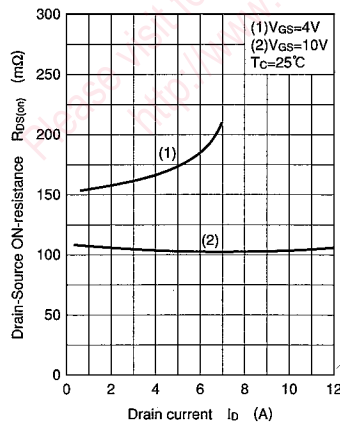
$I_D - V_{DS}$



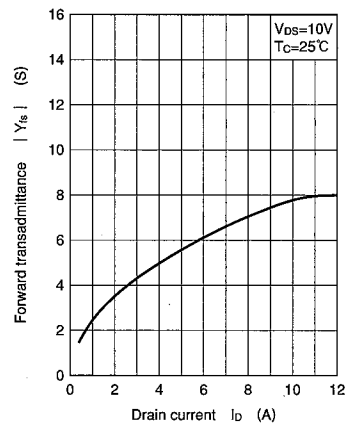
$I_D - V_{GS}$



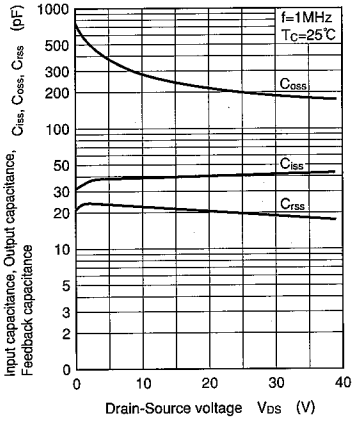
$R_{DS(on)} - I_D$



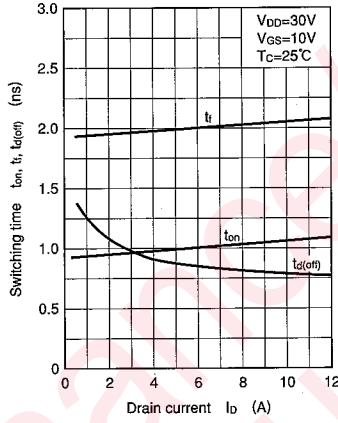
$|Y_{fs}| - I_D$



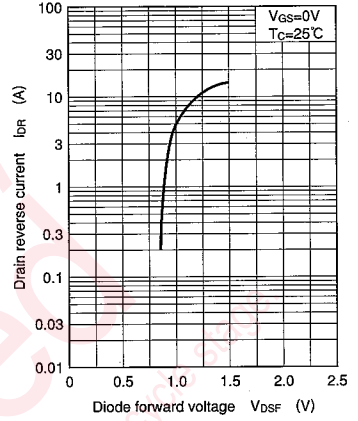
$C_{iss}, C_{oss}, C_{rss} - V_{DS}$



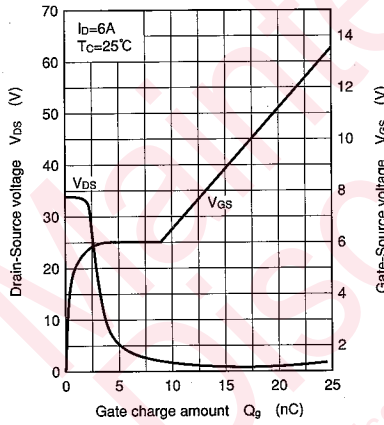
$t_{on}, t_f, t_{d(off)} - I_D$



$I_{DR} - V_{DSF}$



$V_{DS}, V_{GS} - Q_g$



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 maintenance type
 planned discontinued type
 discontinued type
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