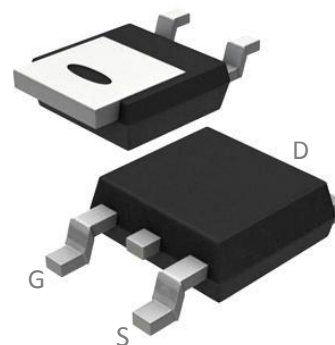


Description:

This P-Channel MOSFET uses advanced trench technology and

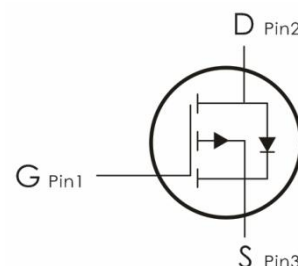
design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.



Features:

- 1) $V_{DS}=-60V, I_D=-10A, R_{DS(on)}<180m\Omega @V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^{\circ}C^1$	-10	A
	Continuous Drain Current- $T_C=100^{\circ}C^1$	-6.5	A
I_{DM}	Pulsed Drain Current ²	-16	A
P_D	Total Power Dissipation ⁴	20.8	W
E_{AS}	Single Pulsed Avalanche Energy ²	11.7	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	$^{\circ}C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
STD10P6F6	STD10P6F6	TO-252

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =-250 μ A	-60	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-48V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =-250 μ A	-1	---	-2.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-8A	---	---	180	m Ω
		V _{GS} =-4.5V, I _D =-4A	---	---	266	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	530	---	pF
C _{oss}	Output Capacitance		---	58	---	
C _{rss}	Reverse Transfer Capacitance		---	37	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, I _D =-1A, V _{GS} =-10V, R _G =3.3 Ω	---	17.3	---	ns
t _r	Rise Time		---	5.3	---	ns
t _{d(off)}	Turn-Off Delay Time		---	37.1	---	ns
t _f	Fall Time		---	2.3	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-20V, I _D =-6A	---	4.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.4	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	1.6	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =-1A	---	---	-1.2	V

I_S	Continuous Source Current ^{1, 5}	$V_G=V_D=0V$	---	---	-10	A
I_{SM}	Pulsed Source Current ^{2, 5}		---	---	-16	A

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-15.3A$
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

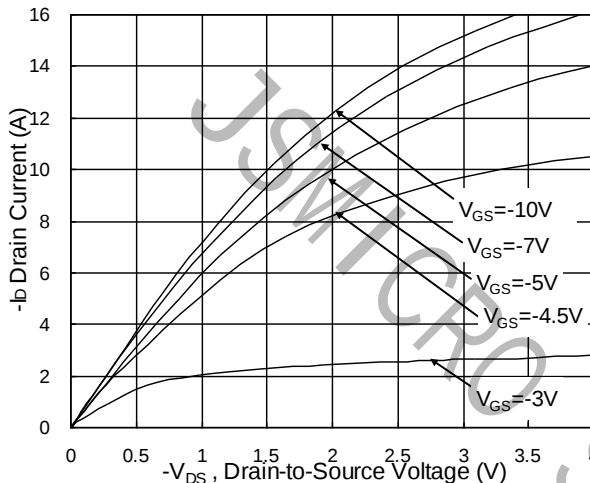


Fig.1 Typical Output Characteristics

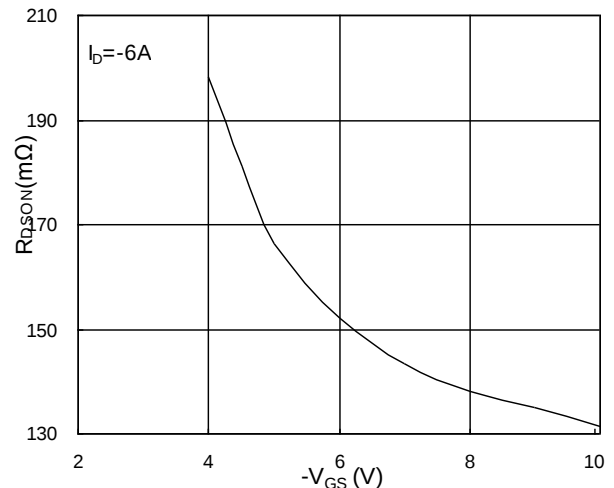


Fig.2 On-Resistance v.s Gate-Source

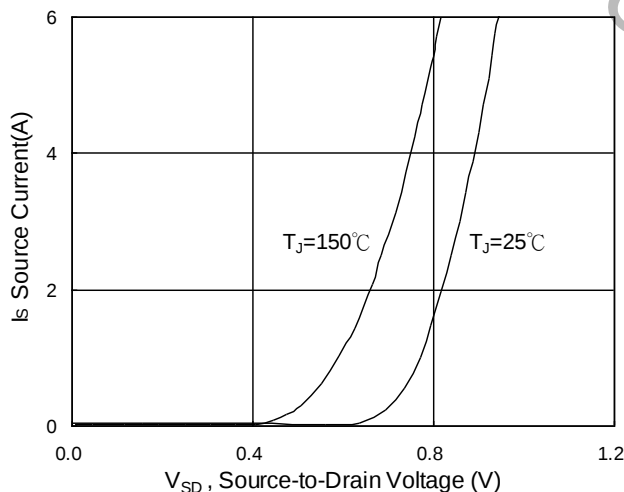


Fig.3 Forward Characteristics Of Reverse

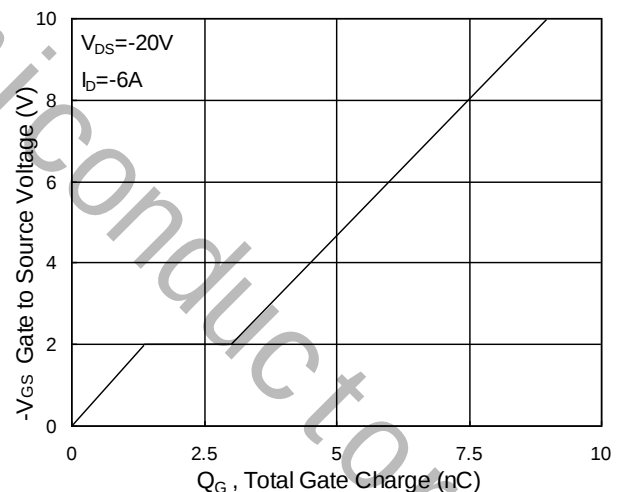


Fig.4 Gate-Charge Characteristics

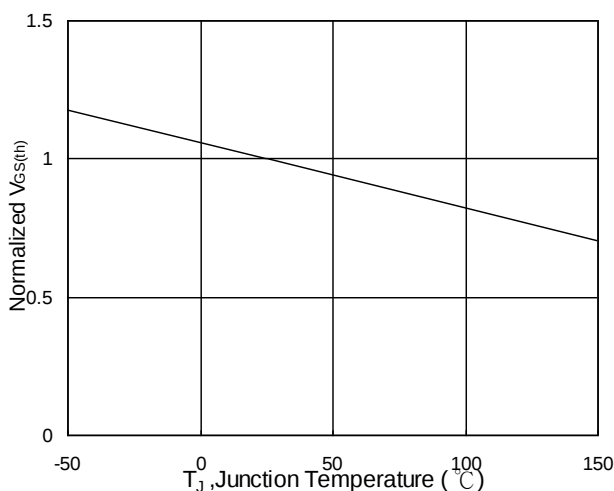


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

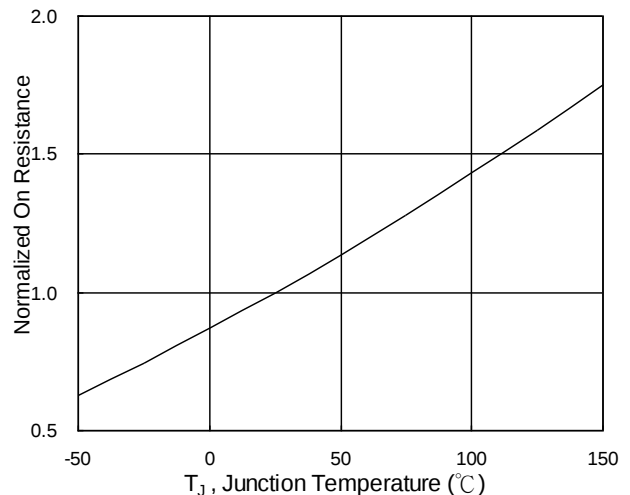


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

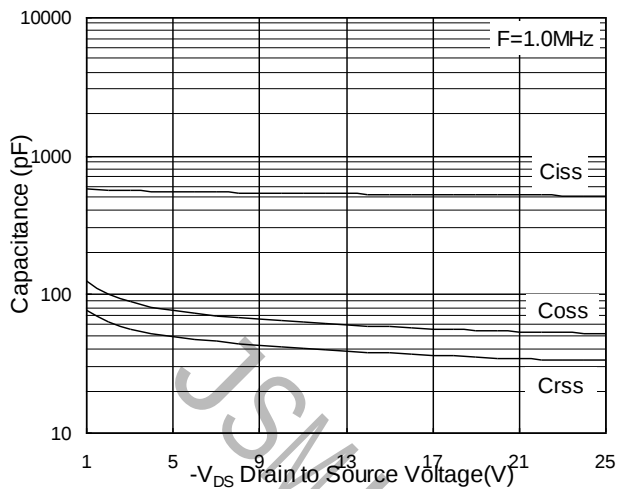


Fig.7 Capacitance

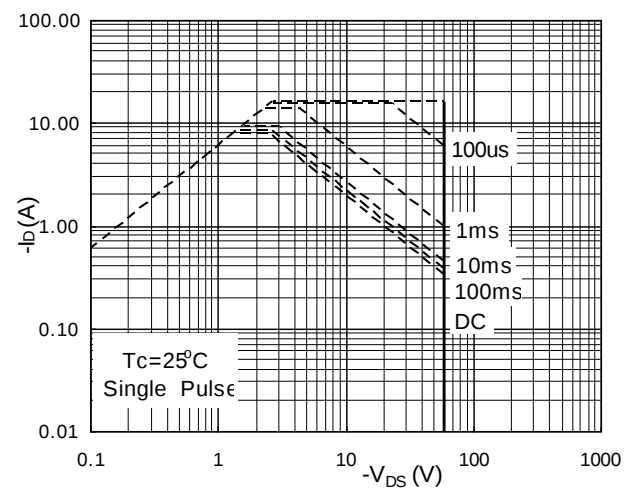


Fig.8 Safe Operating Area

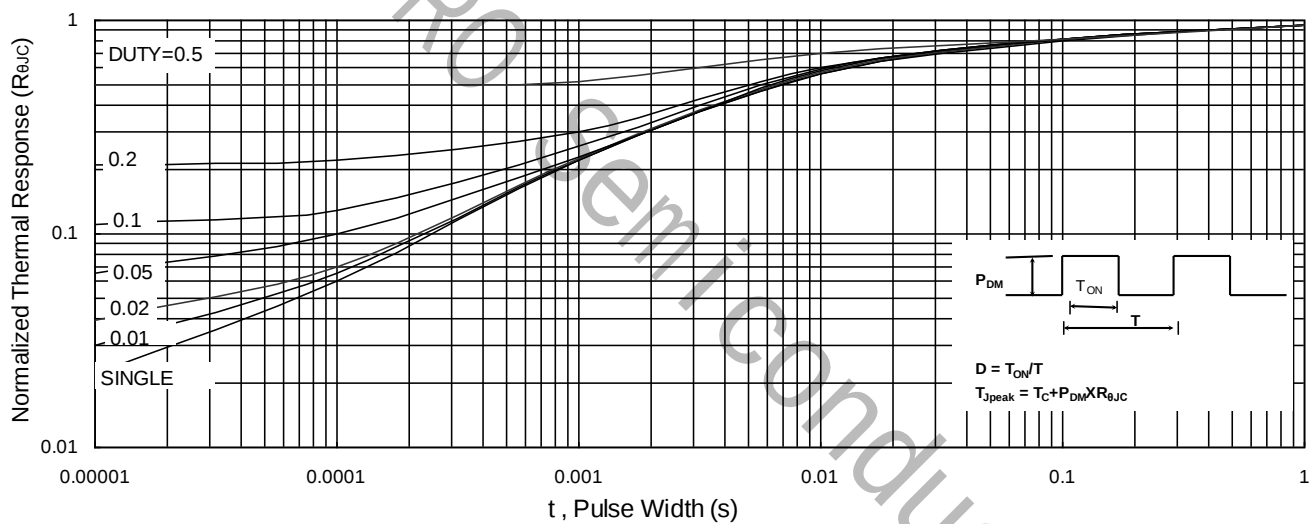


Fig.9 Normalized Maximum Transient Thermal Impedance