

Description:

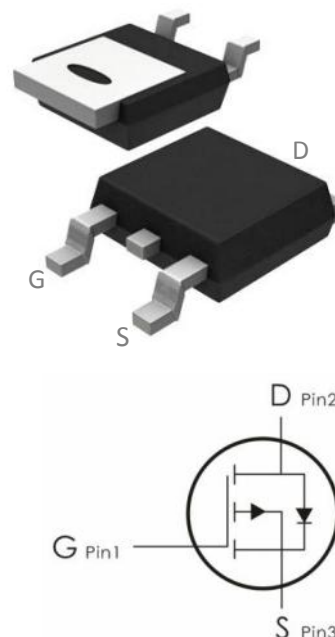
This P-Channel MOSFET uses advanced trench technology and

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

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-30V, I_D=-30A, R_{DS(ON)}<25m\Omega @V_{GS}=-10V$
- 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	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^{\circ}C^1$	-30	A
	Continuous Drain Current- $T_C=100^{\circ}C^1$	-17	A
I_{DM}	Pulsed Drain Current ²	-54	A
E_{AS}	Single Pulsed Avalanche Energy ³	45	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	4	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	$^{\circ}C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOD30P03	30P03	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	-30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-24V	---	---	-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	V _{GS} =-10V, I _D =-12A	---	20	25	m Ω
		V _{GS} =-4.5V, I _D =-6A	---	33	40	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	929	---	pF
C _{oss}	Output Capacitance		---	147	---	
C _{rss}	Reverse Transfer Capacitance		---	114	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-24V, I _D =-1A, V _{GS} =-10V, R _G =3.3 Ω	---	15.4	---	ns
t _r	Rise Time		---	20	---	ns
t _{d(off)}	Turn-Off Delay Time		---	54	---	ns
t _f	Fall Time		---	9	---	ns
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-20V, I _D =-12A	---	9.7	---	nC
Q _{gs}	Gate-Source Charge		---	2.1	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	3.3	---	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	---	---	-30	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	-54	A

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ 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 $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-30A$
- 4.The power dissipation is limited by 150 $^{\circ}C$ junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

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

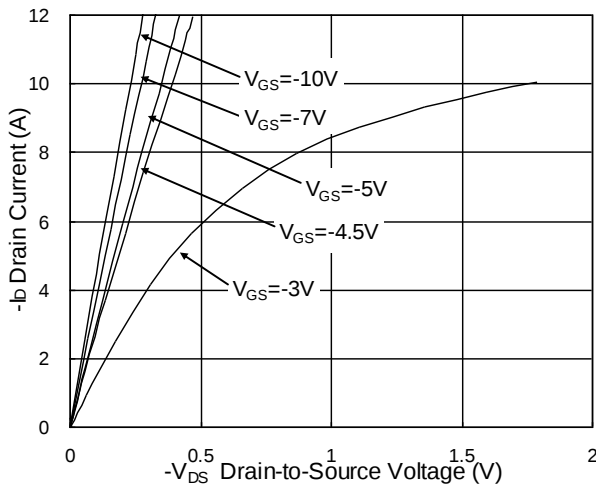


Fig.1 Typical Output Characteristics

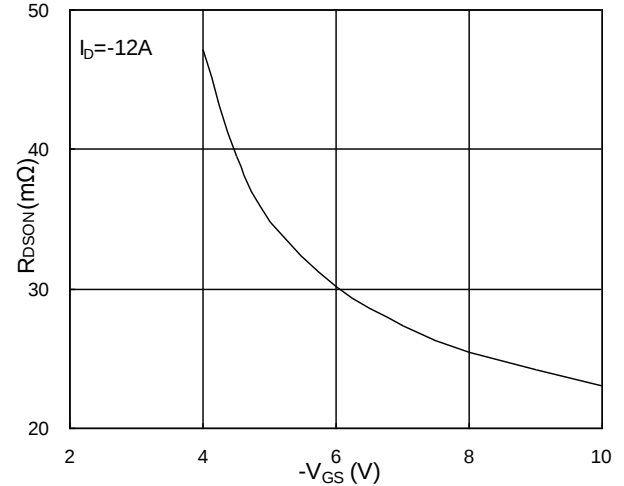


Fig.2 On-Resistance v.s Gate-Source

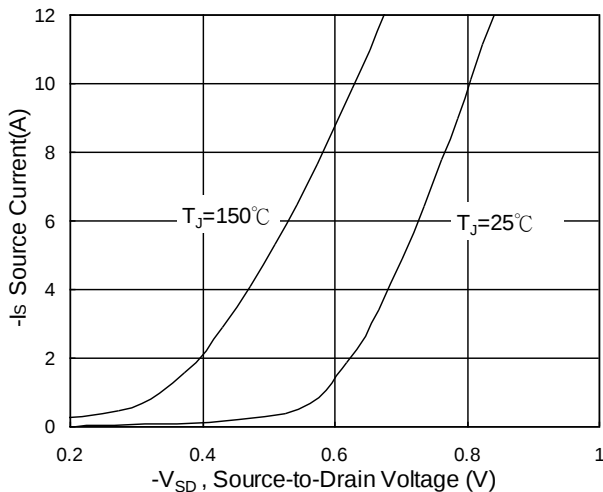


Fig.3 Forward Characteristics of Reverse

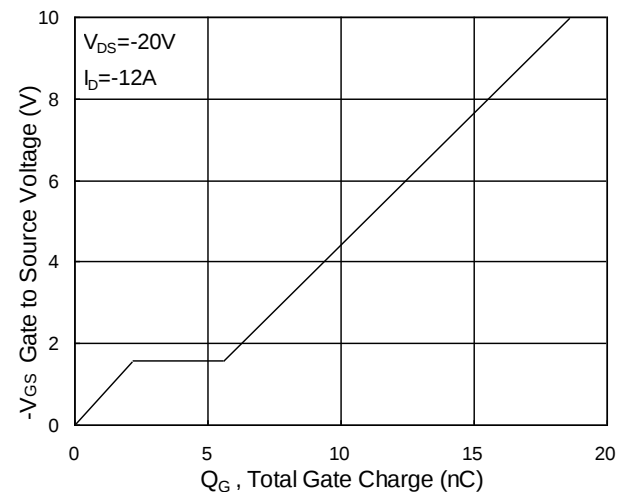


Fig.4 Gate-Charge Characteristics

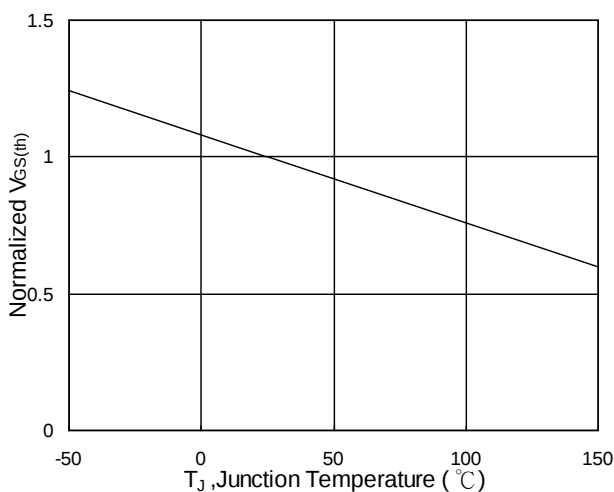


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

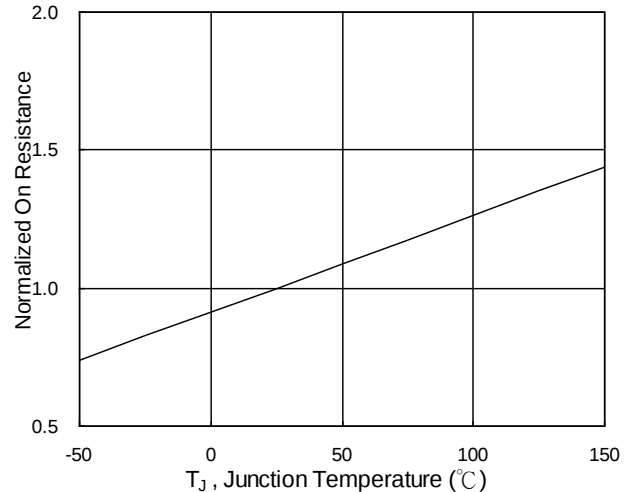


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

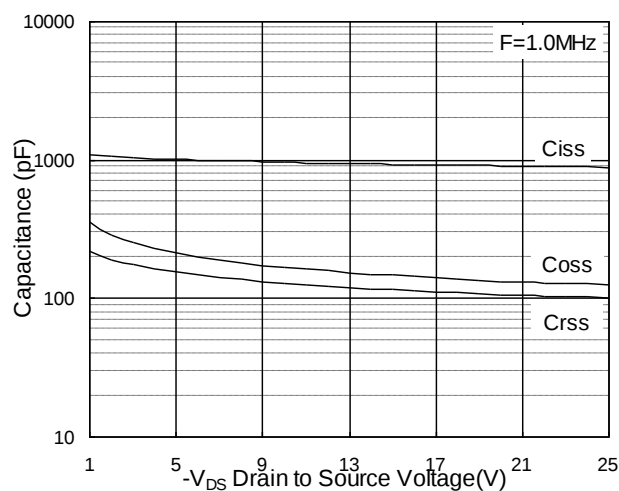


Fig.7 Capacitance

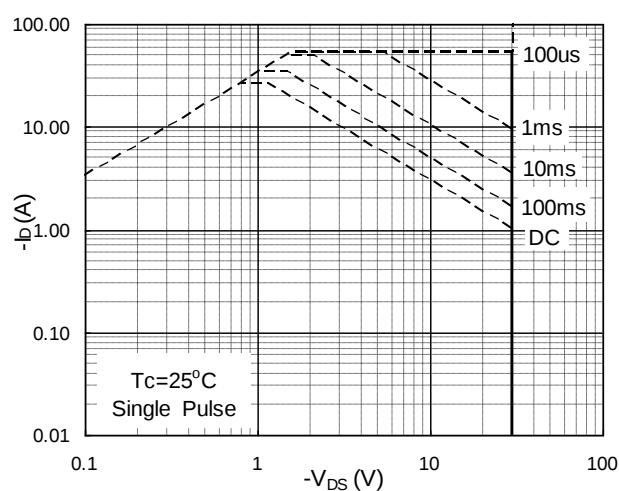


Fig.8 Safe Operating Area

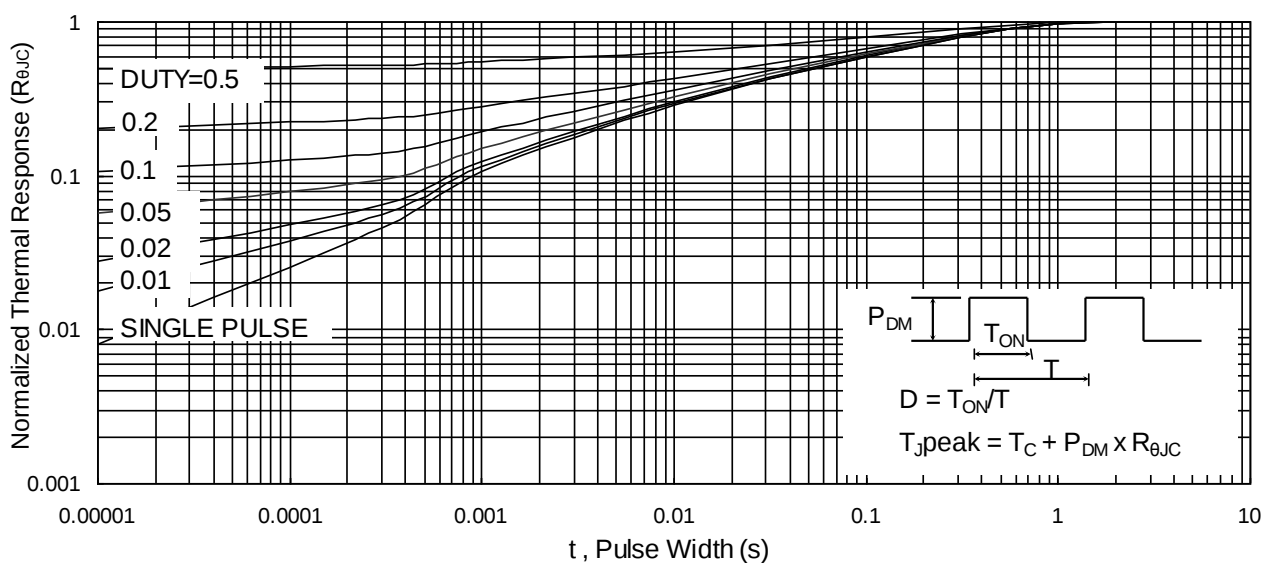


Fig.9 Normalized Maximum Transient Thermal Impedance