

P-Channel 60 V (D-S) MOSFET

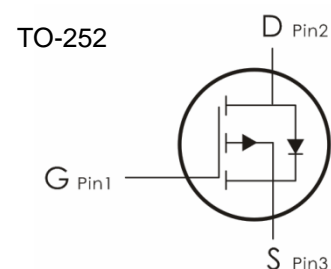
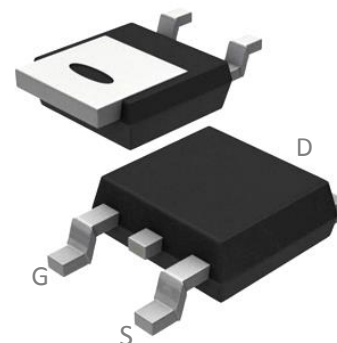
Description:

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) $V_{DS}=-60V, I_D=-30A, R_{DS(ON)}<35m\Omega @V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 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	-30	A
	Continuous Drain Current-TC=100°C	-19	
	Pulsed Drain Current ¹	---	
E_{AS}	Single Pulse Avalanche Energy	225	mJ
P_D	Power Dissipation	50	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	°C

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	42	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=-60V$	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	-1	-1.8	-2.5	V
$R_{DS(on)}$	Drain-Source On Resistance ^②	$V_{GS}=-10V, I_D=-15A$	---	26	35	$m\ \Omega$
		$V_{GS}=-4.5V, I_D=-10A$	---	32	40	
G_{FS}	Forward Transconductance	$V_{DS}=-10V, I_D=-15A$	---	---	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=-30V, V_{GS}=0V, f=1\text{MHz}$	---	2535	---	pF
C_{oss}	Output Capacitance		---	130	---	
C_{rss}	Reverse Transfer Capacitance		---	75	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=-30V, I_D=-10A,$ $R_{GEN}=6.8\ \Omega, V_{GS}=-10V$	---	14	---	ns
t_r	Rise Time		---	18	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	42	---	ns
t_f	Fall Time		---	15	---	ns
Q_g	Total Gate Charge		$V_{GS}=-10V, V_{DS}=-30V,$ $I_D=-10A$	---	46	---
Q_{gs}	Gate-Source Charge	---		11	---	nC
Q_{gd}	Gate-Drain "Miller" Charge	---		10	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=-15A, T_J=25^\circ\text{C}$	---	-0.88	-1.2	V

t_{rr}	Reverse Recovery Time	$I_{sd} = -20A, V_{GS} = 0V$ $.dI/dt = -500A/\mu s$	---	28	---	ns
Q_{rr}	Reverse Recovery Charge		---	165	---	nc

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Pulse width $\leq 300 \mu s$; duty cycle $\leq 2\%$.
3. Limited by T_{Jmax} , starting $T_J = 25^\circ C$, $L = 0.5mH, R_G = 25 \Omega$, $I_{AS} = -32A, V_{GS} = -10V$. Part not recommended for use above this value

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

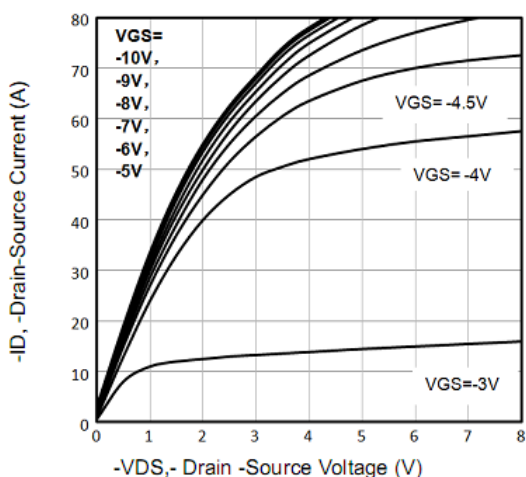


Fig1. Typical Output Characteristics

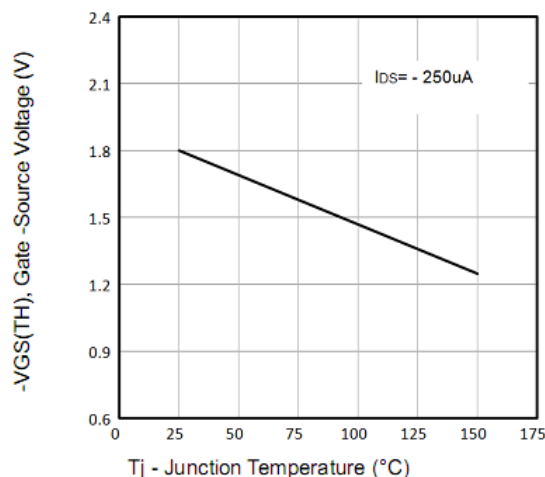


Fig2. $-V_{GS(TH)}$ Gate -Source Voltage Vs. T_J

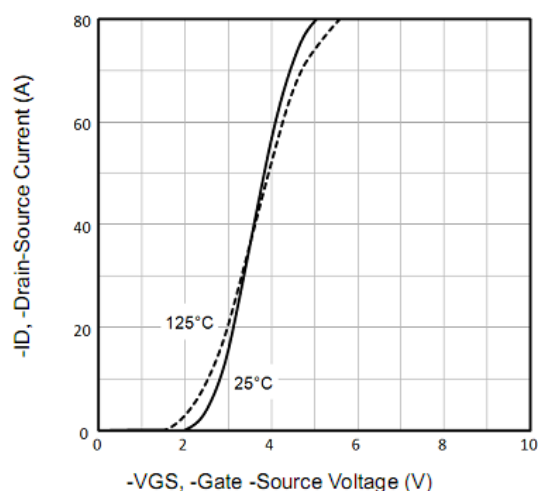


Fig3. Typical Transfer Characteristics

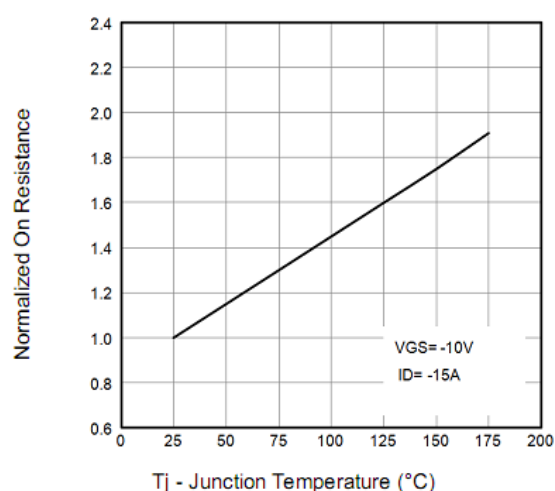


Fig4. Normalized On-Resistance Vs. T_J

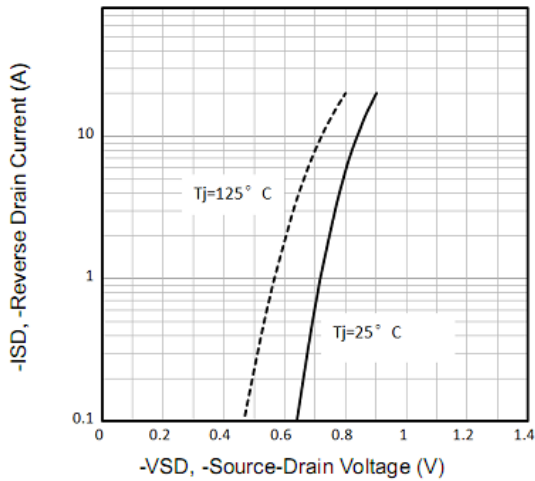


Fig5. Typical Source-Drain Diode Forward Voltage

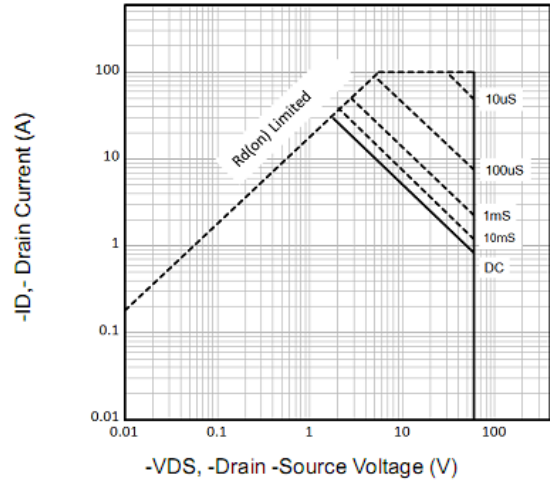


Fig6. Maximum Safe Operating Area

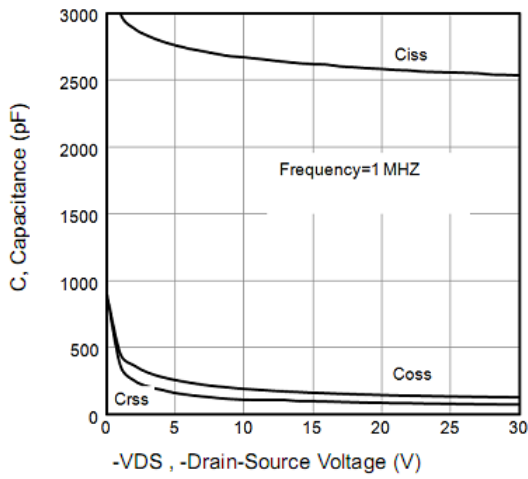


Fig7. Typical Capacitance Vs. Drain-Source Voltage

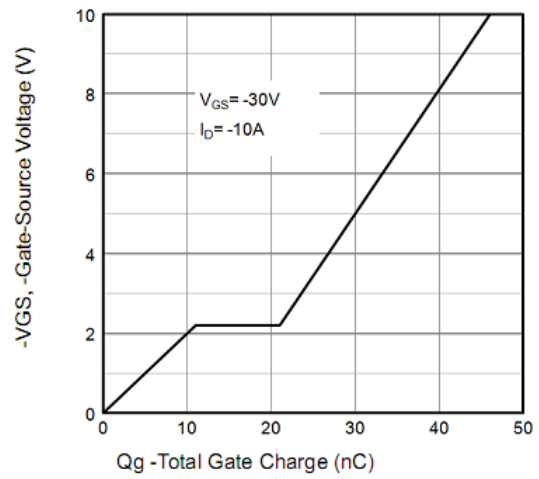


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

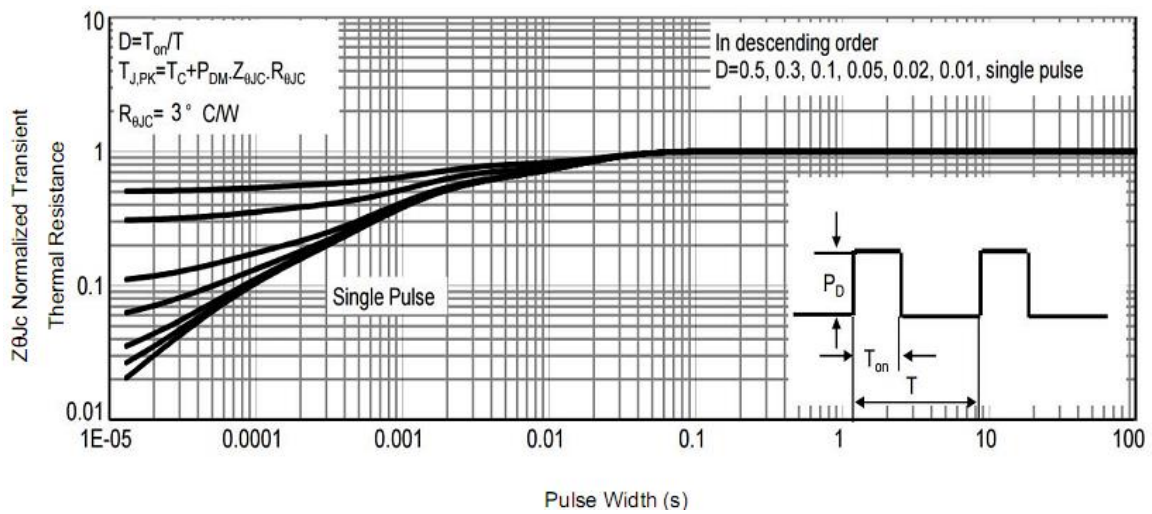


Fig9. Normalized Maximum Transient Thermal Impedance

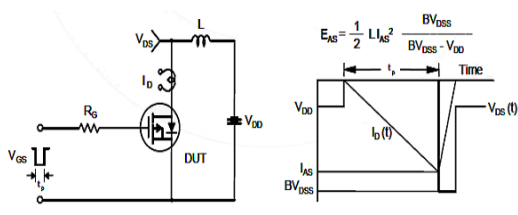


Fig10. Unclamped Inductive Test Circuit and Waveforms

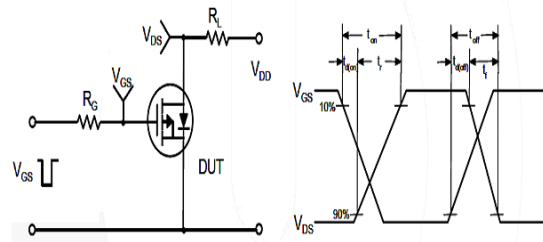


Fig11. Switching Time Test Circuit and waveforms

外形尺寸图 / Package Dimensions

