

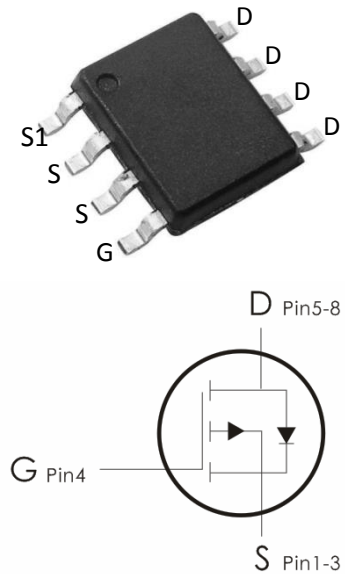
Description:

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) $V_{DS}=-30V, I_D=-5.1A, R_{DS(on)} < 55m\Omega @ V_{GS}=-10V$
- 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	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	-5.1	A
	Continuous Drain Current- $T_C=100^\circ C$	---	
	Pulsed Drain Current ¹	-20	
P_D	Power Dissipation ⁴	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ²	50	

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	-33	---	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 ³						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-1.6	-3	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =-10V, I _D =-5.1A	---	43	55	m Ω
		V _{GS} =-4.5V, I _D =-4.2A	---	62	90	
G _{FS}	Forward Transconductance	V _{DS} =-15V, I _D =-5.1A	4	7	---	S
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	980	---	pF
C _{oss}	Output Capacitance		---	390	---	
C _{rss}	Reverse Transfer Capacitance		---	135	---	
Switching Characteristics ⁴						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, I _D =-1A, R _{GEN} =6 Ω	---	14	---	ns
t _r	Rise Time		---	12	---	ns
t _{d(off)}	Turn-Off Delay Time		---	56	---	ns
t _f	Fall Time		---	20	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-5.1A	---	11	---	nC
Q _{gs}	Gate-Source Charge		---	2	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	2.8	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =-5.1A	---	---	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

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

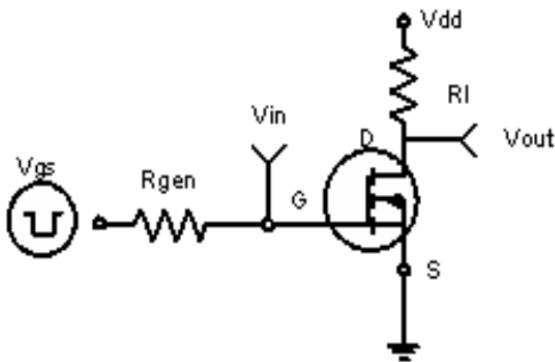


Figure 1: Switching Test Circuit

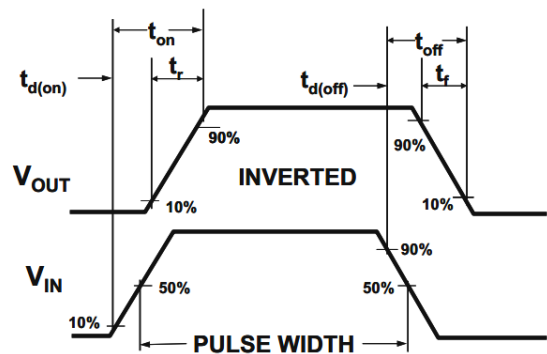


Figure 2: Switching Waveforms

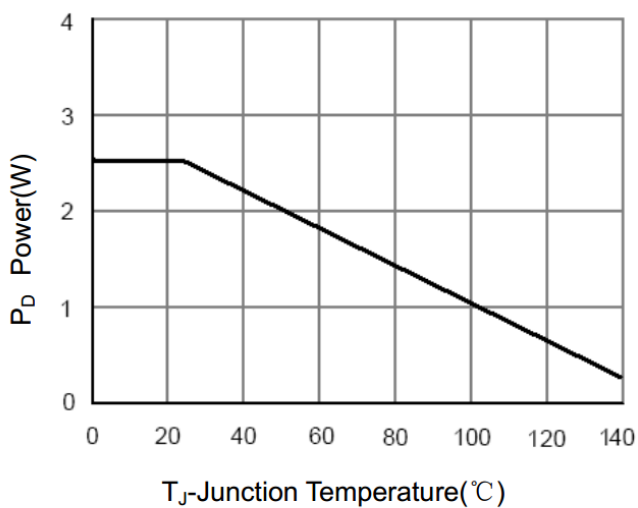


Figure 3 Power Dissipation

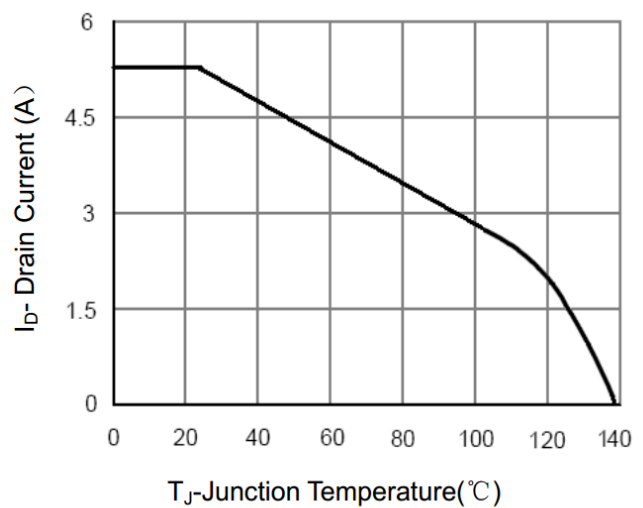


Figure 4 Drain Current

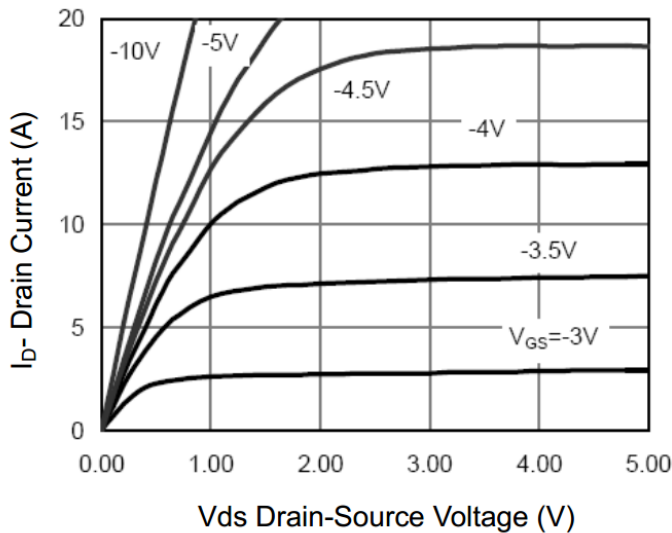


Figure 5 Output Characteristics

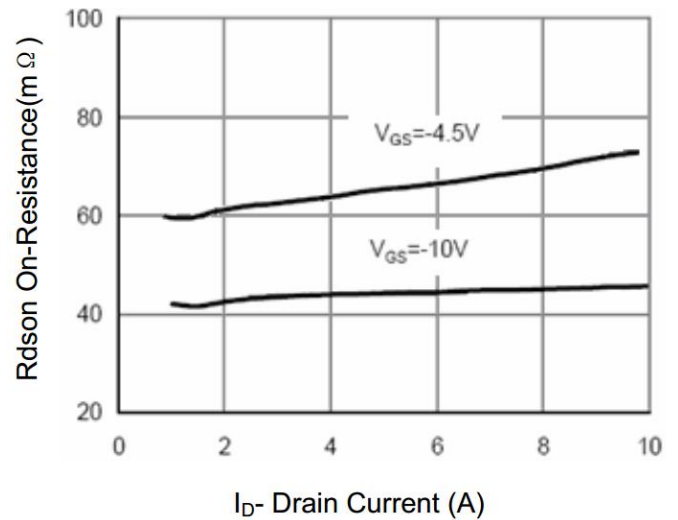


Figure 6 Drain-Source On-Resistance

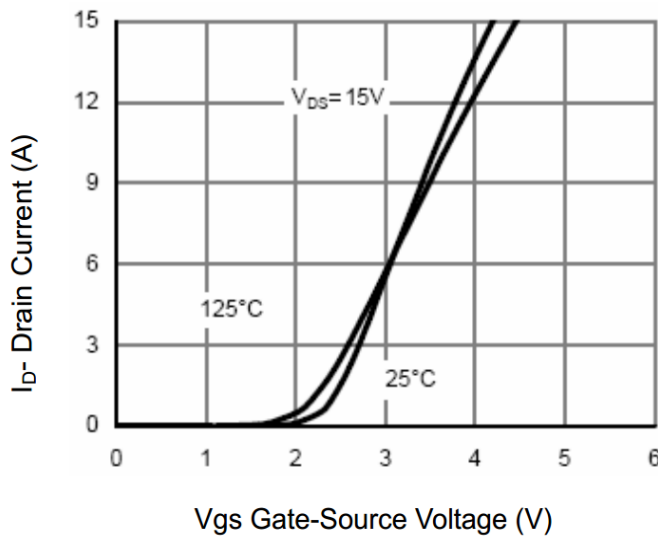


Figure 7 Transfer Characteristics

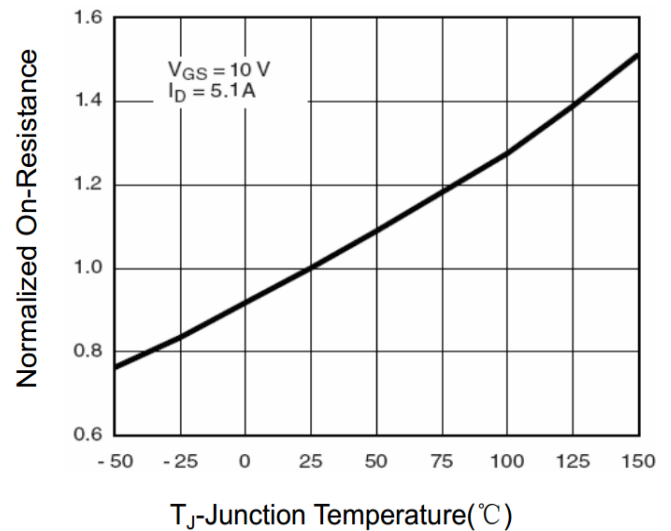


Figure 8 Drain-Source On-Resistance

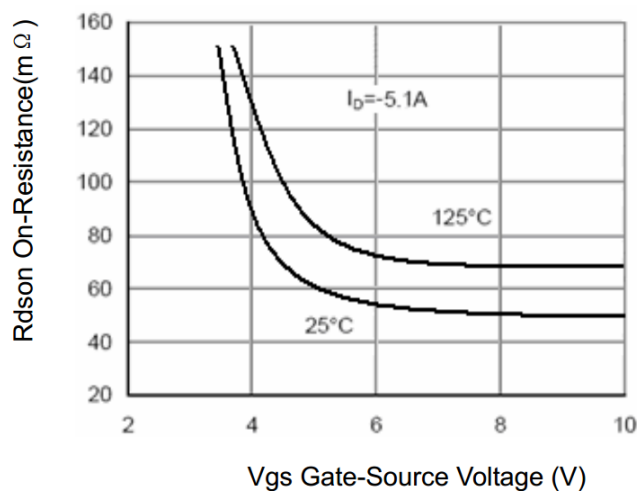


Figure 9 $R_{DS(on)}$ vs V_{GS}

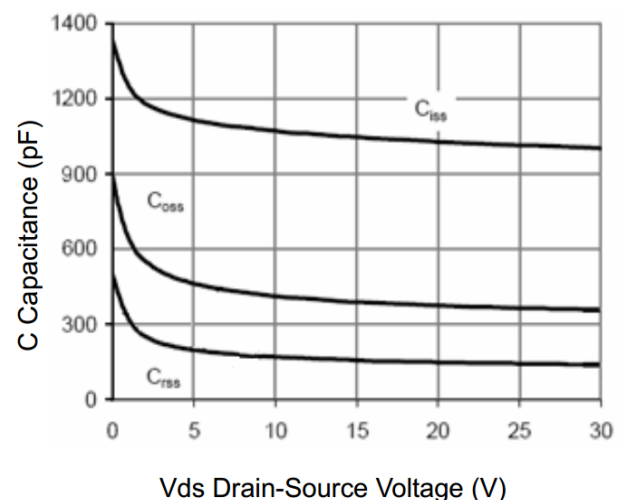
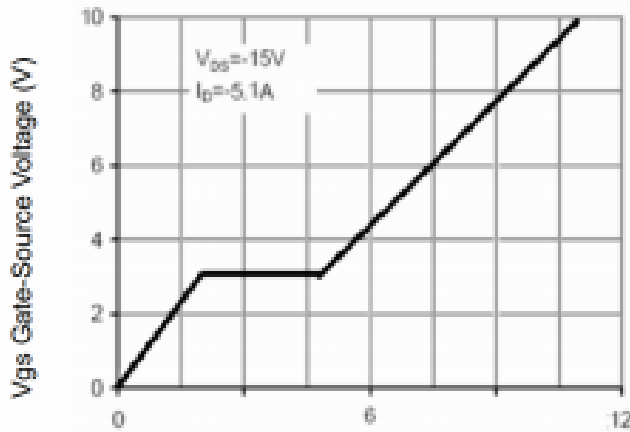
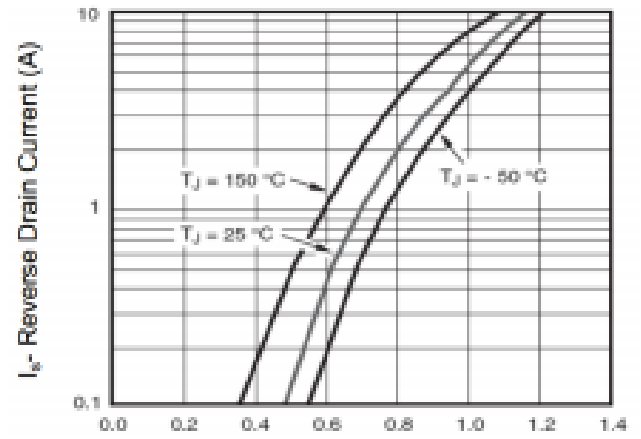


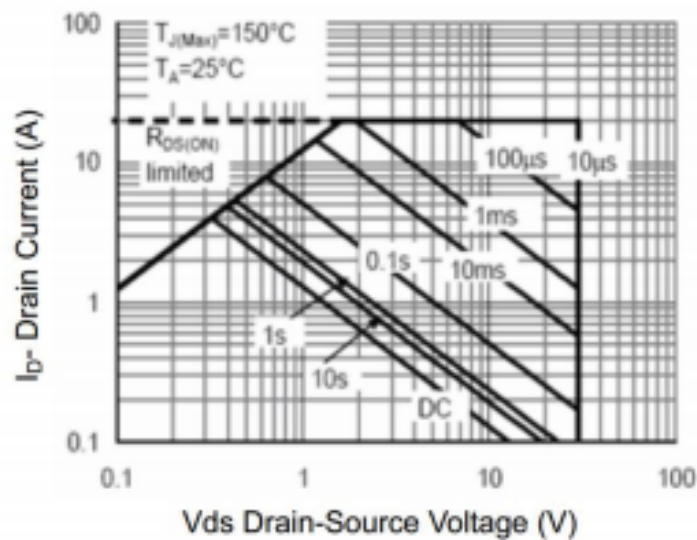
Figure 10 Capacitance vs V_{DS}



Qg Gate Charge (nC)
Figure 11 Gate Charge



Vsd Source-Drain Voltage (V)
Figure 12 Source- Drain Diode Forward



Vds Drain-Source Voltage (V)
Figure 13 Safe Operation Area

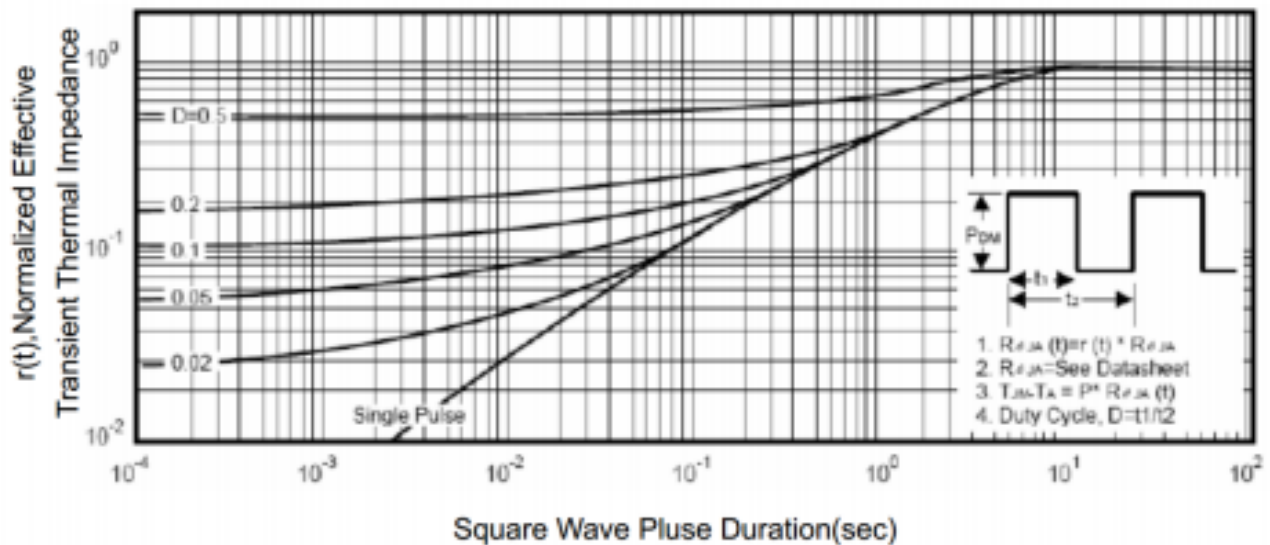


Figure 14 Normalized Maximum Transient Thermal Impedance

