

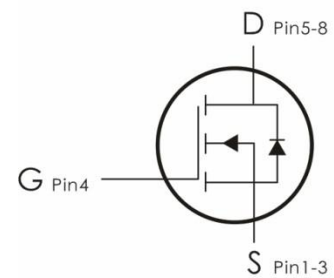
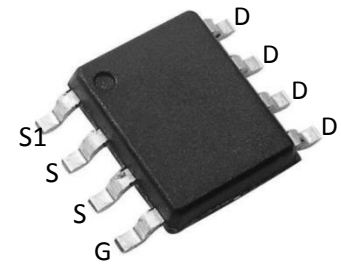
Description:

This N-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) $V_{DS}=30V, I_D=10A, R_{DS(ON)} < 13m\Omega @ V_{GS}=10V$
- 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: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_C=25^\circ\text{C}$)	10	A
	Drain Current – Continuous ($T_C=100^\circ\text{C}$)	6	
I_{DM}	Drain Current – Pulsed	50	
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	2.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ²	50	$^\circ\text{C/W}$

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 μ A	30	33	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V , V _{GS} =0V ,T _J =25℃	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V, V _{DS} =0V	---	---	± 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)}	Static Drain-Source On Resistance	V _{GS} =10V, I _D =10A	---	10	13	m Ω
		V _{GS} =4.5V, I _D =5A	---	13	18	
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =10A	15	---	---	S
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	1550	---	pF
C _{oss}	Output Capacitance		---	300	---	
C _{rss}	Reverse Transfer Capacitance		---	180	---	
Switching Characteristics ⁴						
t _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DS} =25V, I _D =1A, R _{GEN} =6 Ω , V _{GS} =10V	---	30	---	ns
t _r	Rise Time ^{2,3}		---	200	---	ns
t _{d(off)}	Turn-Off Delay Time ^{2,3}		---	100	---	ns
t _f	Fall Time ^{2,3}		---	80	---	ns
Q _g	Total Gate Charge ^{2,3}	V _{GS} =5V, V _{DS} =15V, I _D =10A	---	13	---	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	5.5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{2,3}		---	3.5	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V, I _S =10A, T _J =25℃	---	---	1.2	V
I _S	Continuous Source Current ²		---	---	10	A

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 $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

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

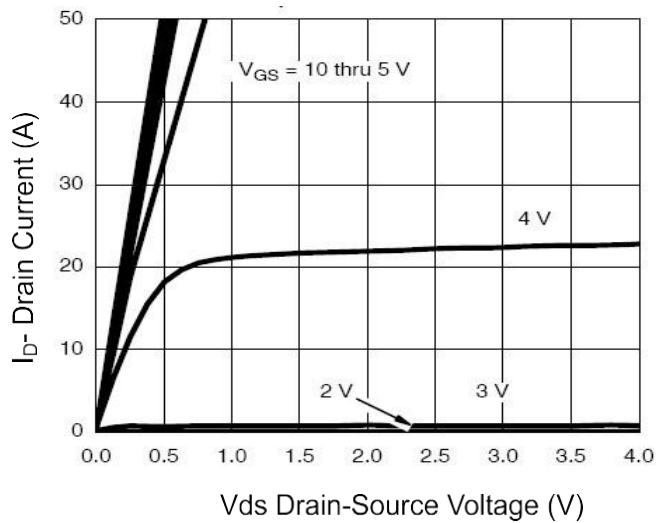


Figure 1 Output Characteristics

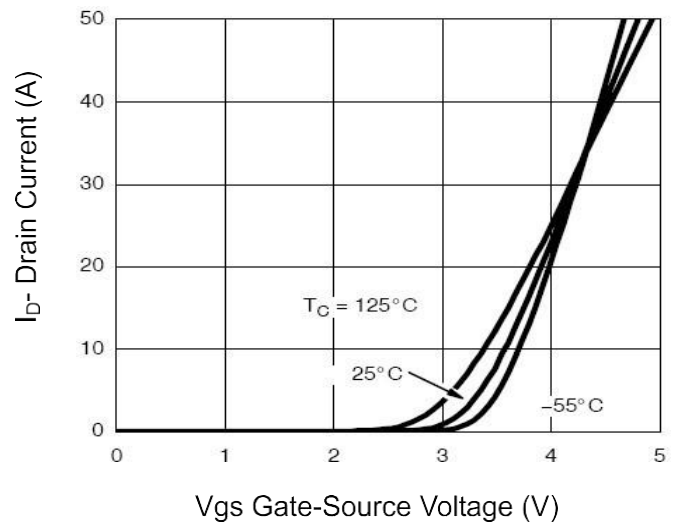


Figure 2 Transfer Characteristics

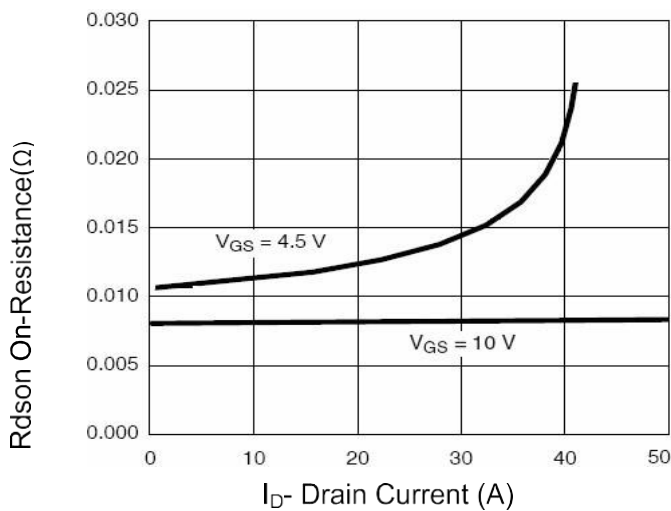


Figure 3 $R_{DS(on)}$ -Drain Current

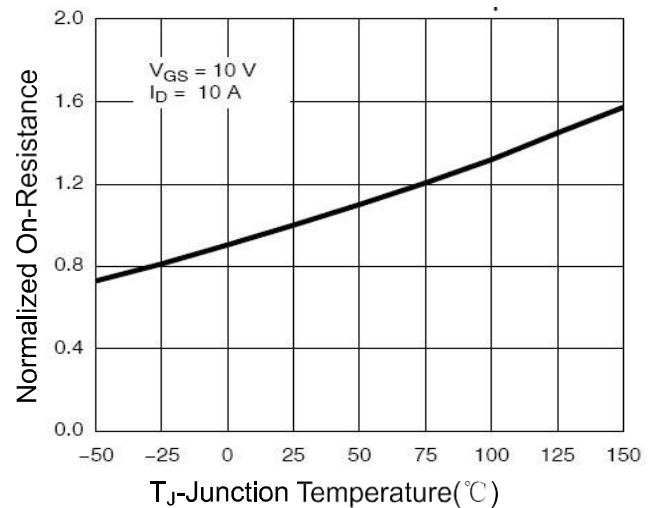


Figure 4 $R_{DS(on)}$ -Junction Temperature

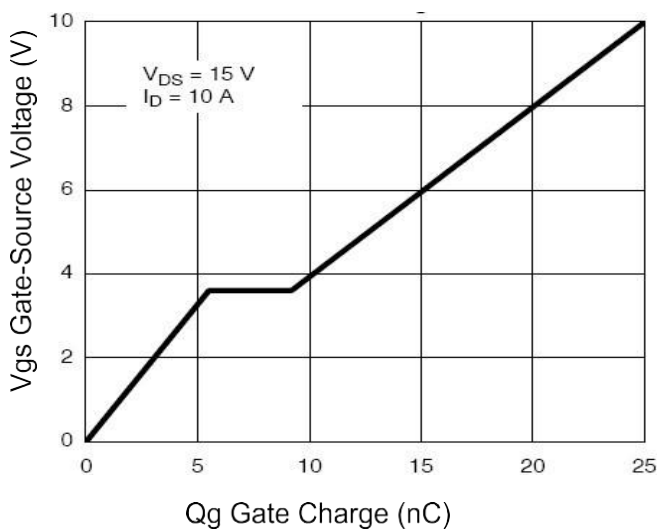


Figure 5 Gate Charge

Figure 6 Source- Drain Diode Forward

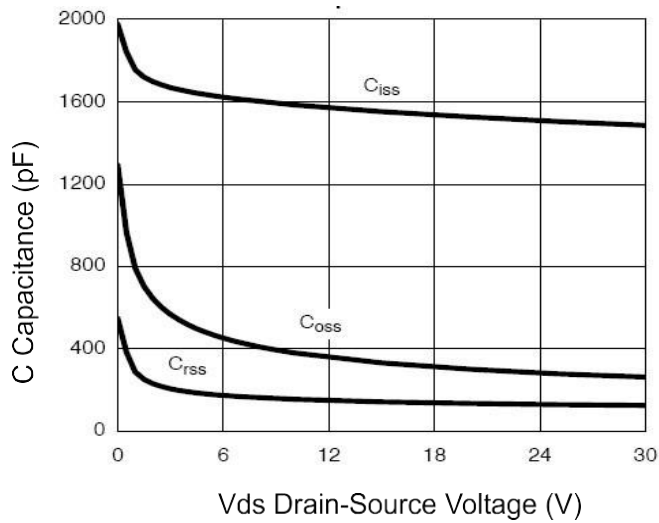


Figure 6 Capacitance vs Vds

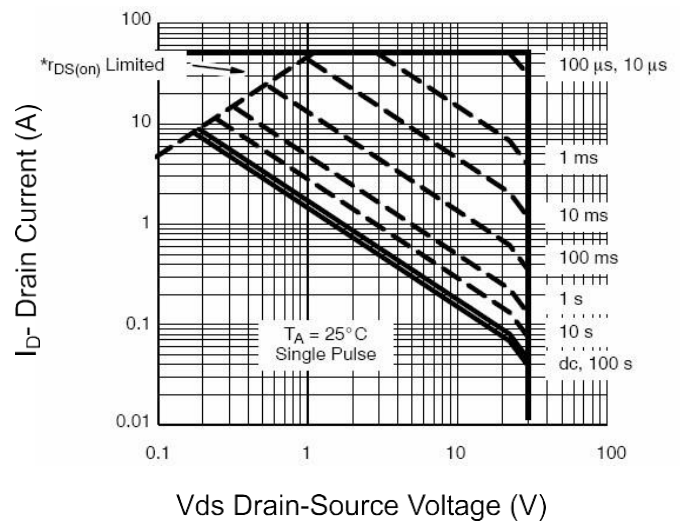


Figure 7 Safe Operation Area

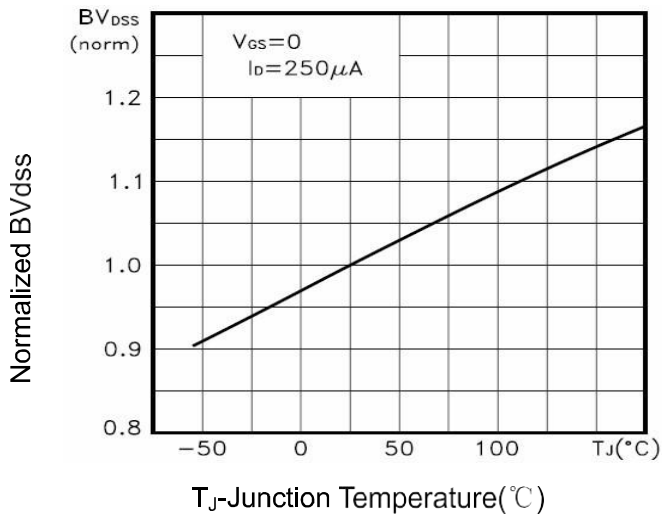


Figure8 BV_{dss} vs Junction Temperature

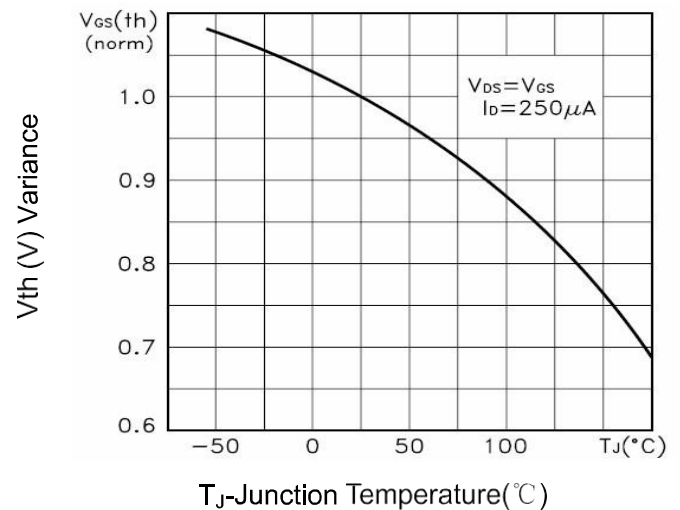


Figure9 $V_{GS(th)}$ vs Junction Temperature

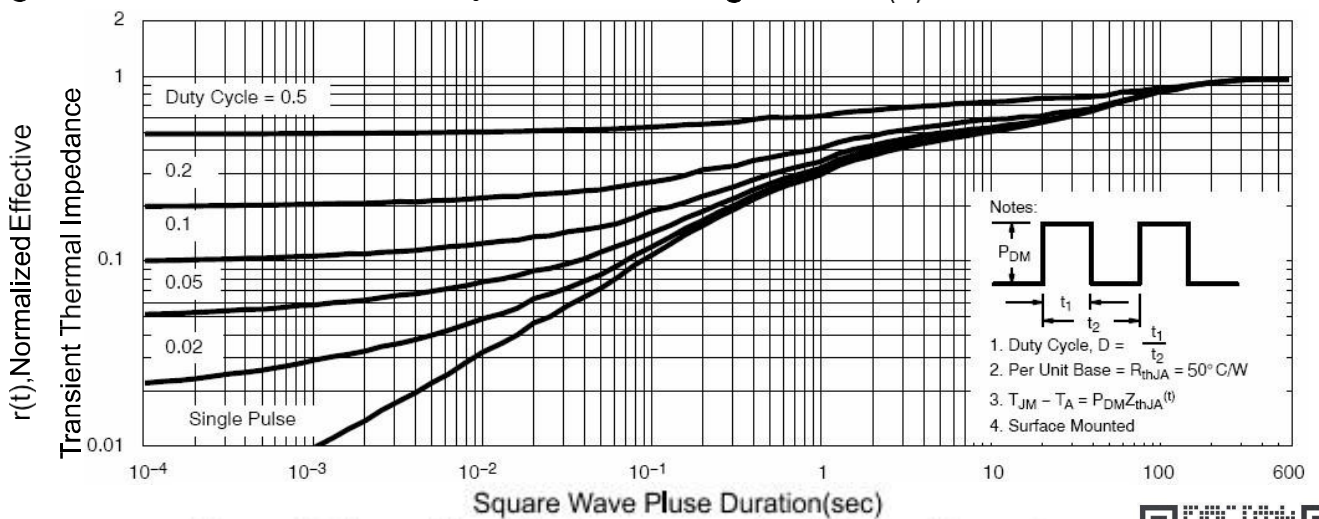


Figure 10 Normalized Maximum Transient Thermal Impedance

