

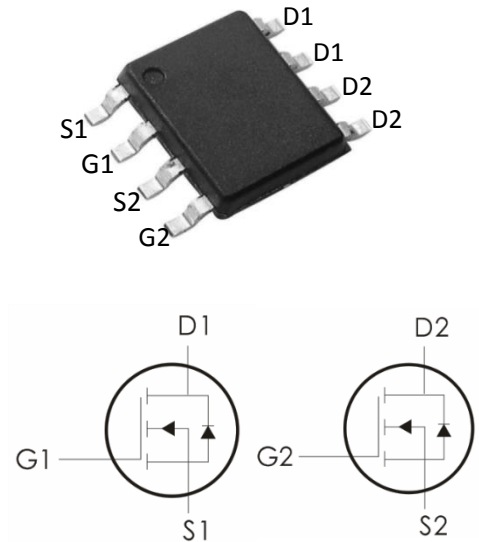
## Description:

This Dual 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)  $V_{DS}=20V, I_D=12A, R_{DS(on)} < 11m\ \Omega @ V_{GS}=4.5V$
- 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	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 10$	V
$I_D$	Continuous Drain Current-	12	A
	Pulsed Drain Current <sup>1</sup>	45	
$P_D$	Power Dissipation	2	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 <sup>2</sup>	62.5	$^\circ C/W$

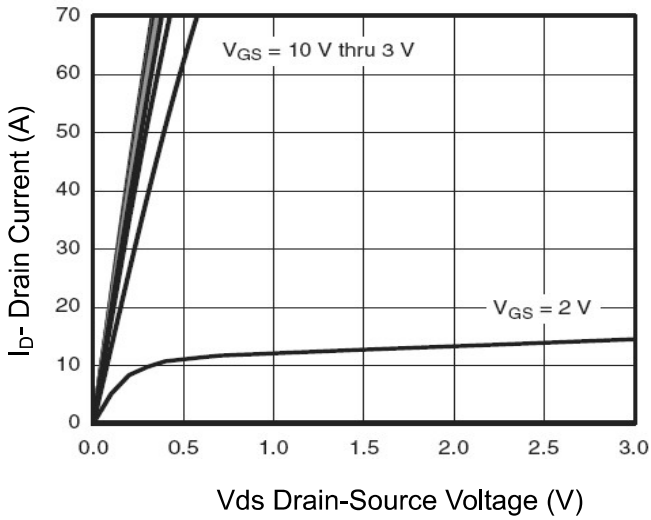
**Electrical Characteristics:** ( $T_c=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	20	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=20V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics<sup>3</sup></b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	0.5	0.7	1	V
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=4.5V, I_D=5A$	---	8	11	m $\Omega$
		$V_{GS}=2.5V, I_D=4A$	---	10	13	
$G_{FS}$	Forward Transconductance	$V_{DS}=5V, I_D=8A$	---	15	---	S
<b>Dynamic Characteristics<sup>4</sup></b>						
$C_{iss}$	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$	---	1800	---	pF
$C_{oss}$	Output Capacitance		---	230	---	
$C_{rss}$	Reverse Transfer Capacitance		---	200	---	
<b>Switching Characteristics<sup>4</sup></b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=10V, R_L=1.2\ \Omega$ $R_{GEN}=3\ \Omega, V_{GS}=10V,$	---	2.5	---	ns
$t_r$	Rise Time		---	7.2	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	49	---	ns
$t_f$	Fall Time		---	10.8	---	ns
$Q_g$	Total Gate Charge		$V_{GS}=4.5V, V_{DS}=10V,$ $I_D=8A$	---	17.9	---
$Q_{gs}$	Gate-Source Charge	---		1.5	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge	---		4.7	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>3</sup>	$V_{GS}=0V, I_S=4.5A$	---	---	1.2	V
$I_S$	Maximum Body-Diode Continuous Current <sup>2</sup>		---	---	12	

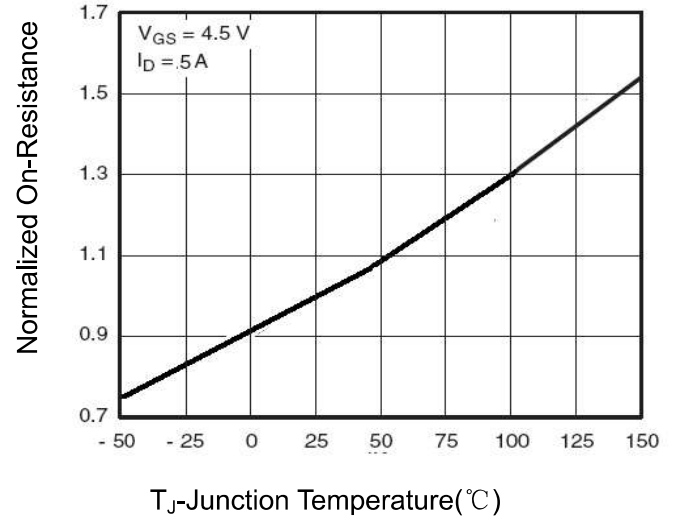
**Notes:**

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

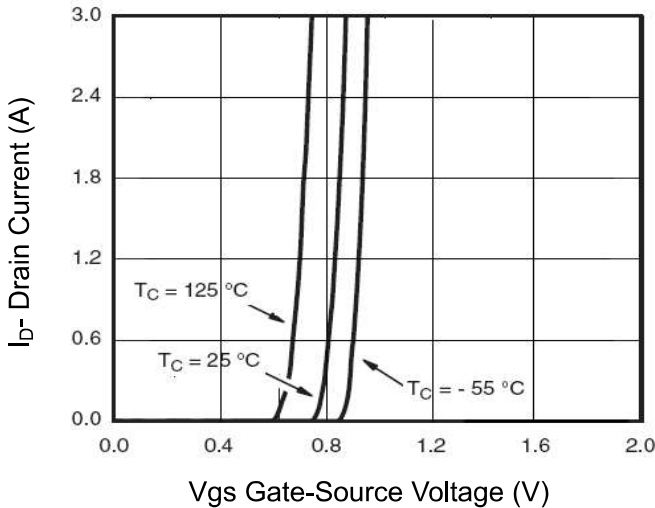
Typical Characteristics: ( $T_c=25^\circ\text{C}$  unless otherwise noted)



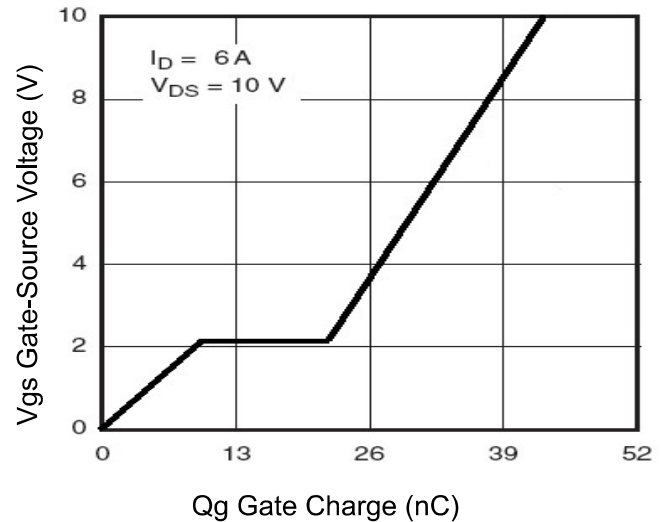
**Figure 1 Output Characteristics**



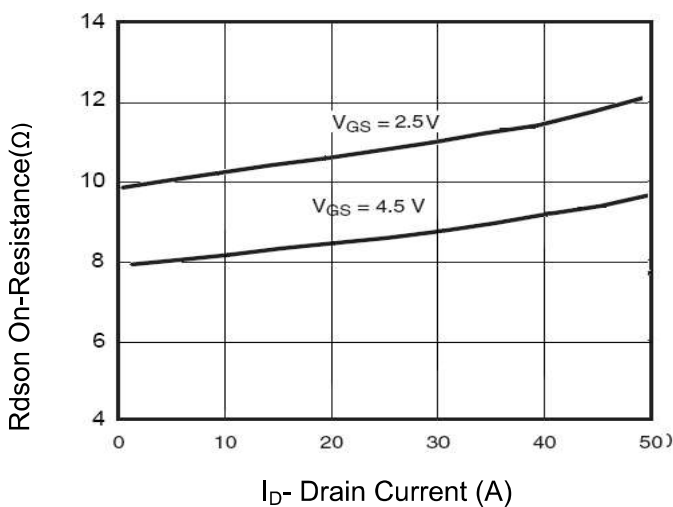
**Figure 2 Rdson-Junction Temperature**



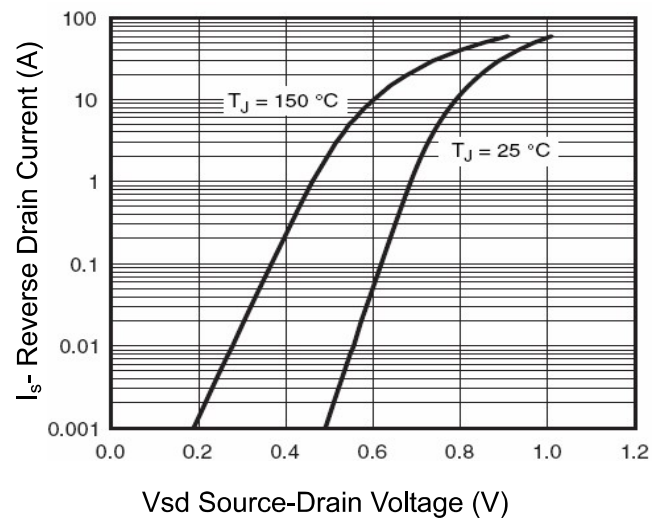
**Figure 3 Transfer Characteristics**



**Figure 4 Gate Charge**



**Figure 5 Rdson- Drain Current**



**Figure 6 Source- Drain Diode Forward**

