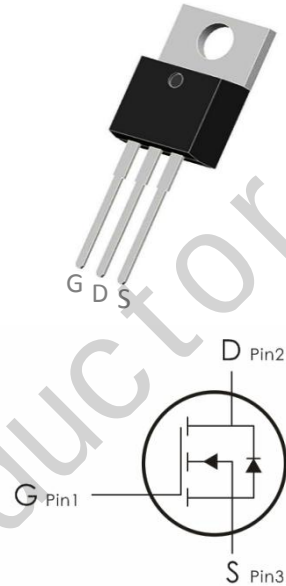


Description:

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) $V_{DS}=-30V, I_D=-70A, R_{DS(on)}<7.5m\Omega@V_{GS}=-10V$
- 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	
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C$	-70	A
	Continuous Drain Current- $T_C=100^\circ C$	-44	
I_{DM}	Drain Current -Pulsed ¹	-240	A
P_D	Power Dissipation- $T_C=25^\circ C$	110	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.4	

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} =-30V, T _J =25C	---	---	-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	-1.5	-2	V
R _{DS(ON)}	Drain- Source On Resistance	V _{GS} =-10V, I _D =-20A	---	5.7	7.5	mΩ
		V _{GS} =-4.5V, I _D =-20A	---	8	10.5	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	3150	---	pF
C _{oss}	Output Capacitance		---	358	---	
C _{rss}	Reverse Transfer Capacitance		---	342	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, I _D =-20A, R _G =3Ω. V _{GS} =-10V	---	10	---	ns
t _r	Rise Time		---	47	---	ns
t _{d(off)}	Turn-Off Delay Time		---	75	---	ns
t _f	Fall Time		---	44	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _D =-20A	---	84	---	nC
Q _{gs}	Gate-Source Charge		---	13	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	15	---	nC
Drain- Source Diode Characteristics						
V _{SD}	Source- Drain Diode Forward Voltage	V _{GS} =0V, I _S =20A	---	---	-1.2	V
I _S	Diode Forward Current	V _D =V _G =0V	---	---	-70	A
I _{SM}	Diode Forward Current	V _D =V _G =0V	---	---	-210	A

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = -30\text{V}$, $V_G = -10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

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

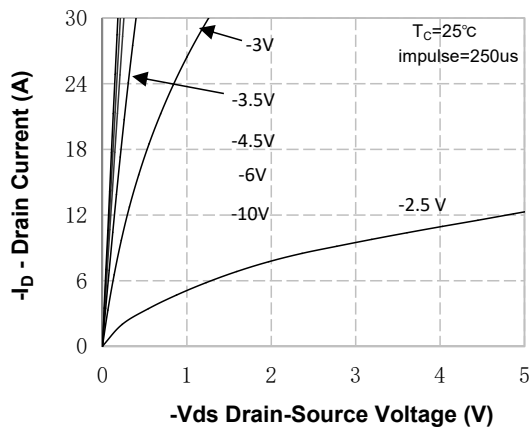


Figure 1. On-Region Characteristics

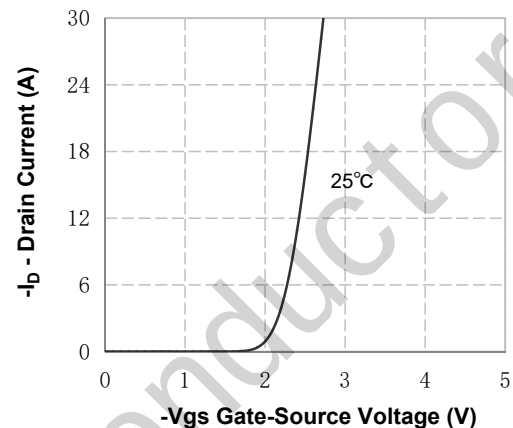


Figure 2. Transfer Characteristics

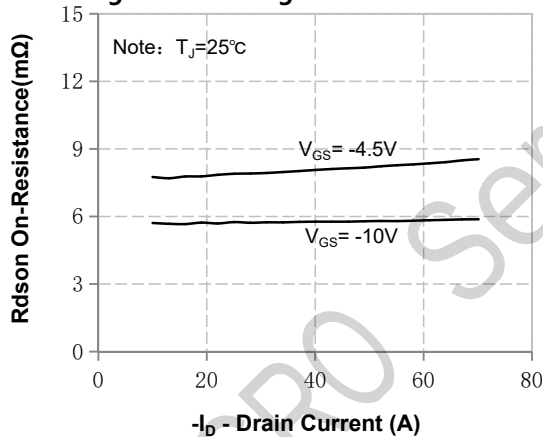


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

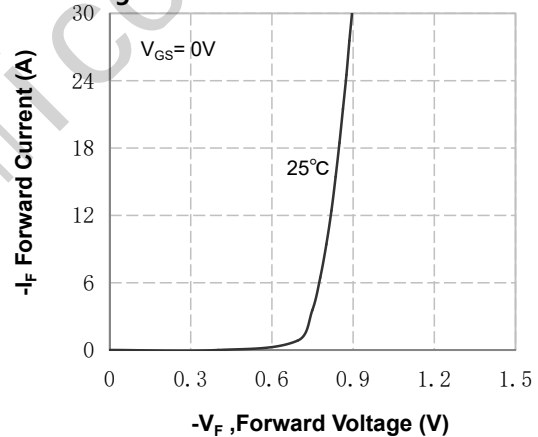


Figure 4. Body Diode Forward Voltage Variation with Source Current

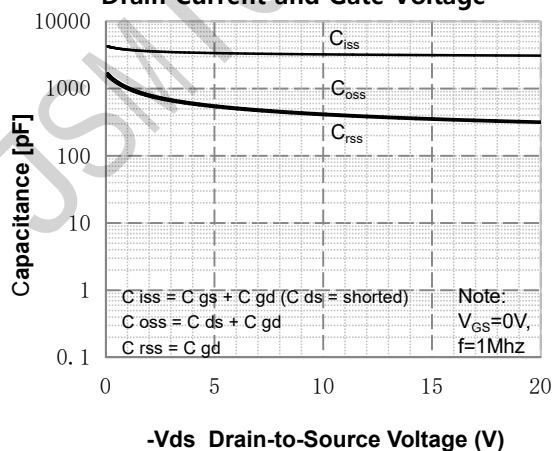


Figure 5. Capacitance Characteristics

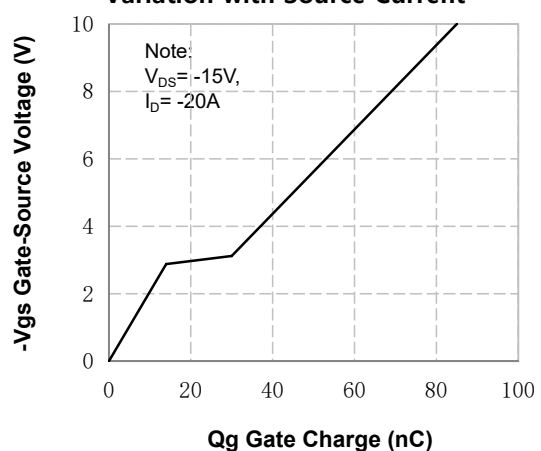


Figure 6. Gate Charge Characteristics

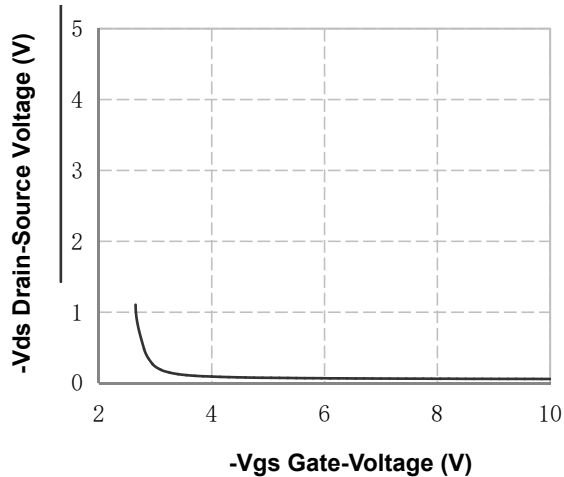


Figure 7. V_{DS} Drain-Source Voltage vs Gate Voltage

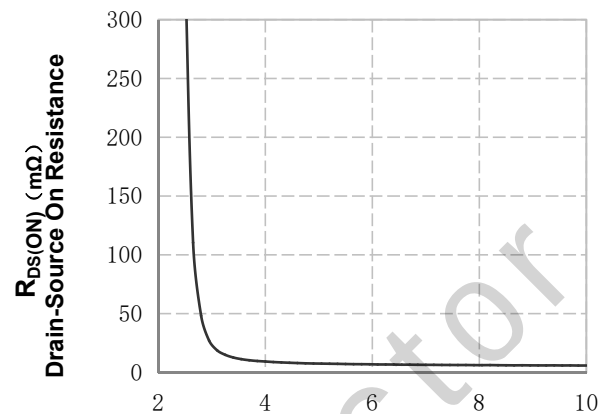


Figure 8. On-Resistance vs Gate Voltage

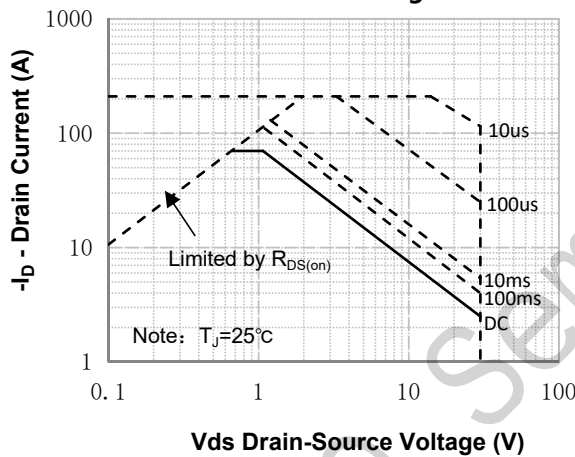


Figure 9. Maximum Safe Operating Area

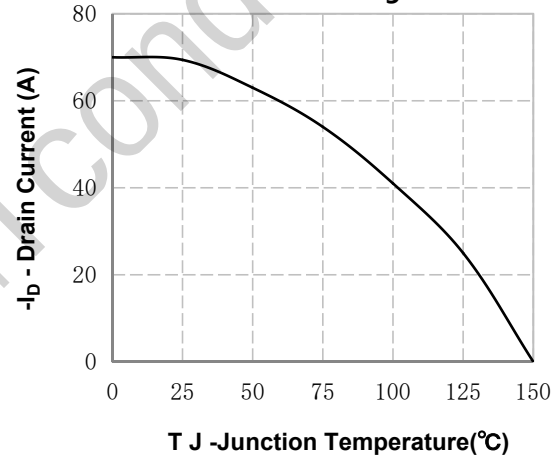


Figure 10. Maximum Continuous Drain Current vs Case Temperature

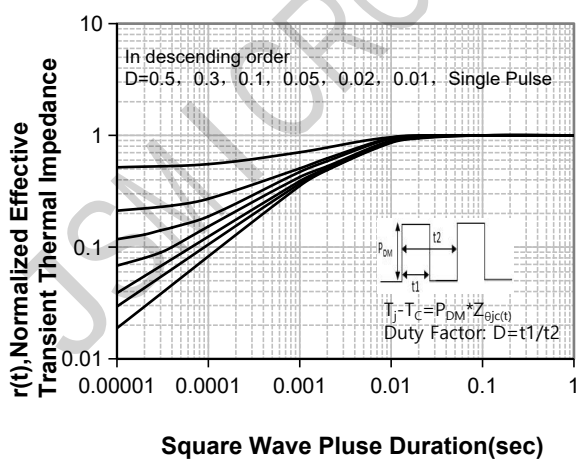
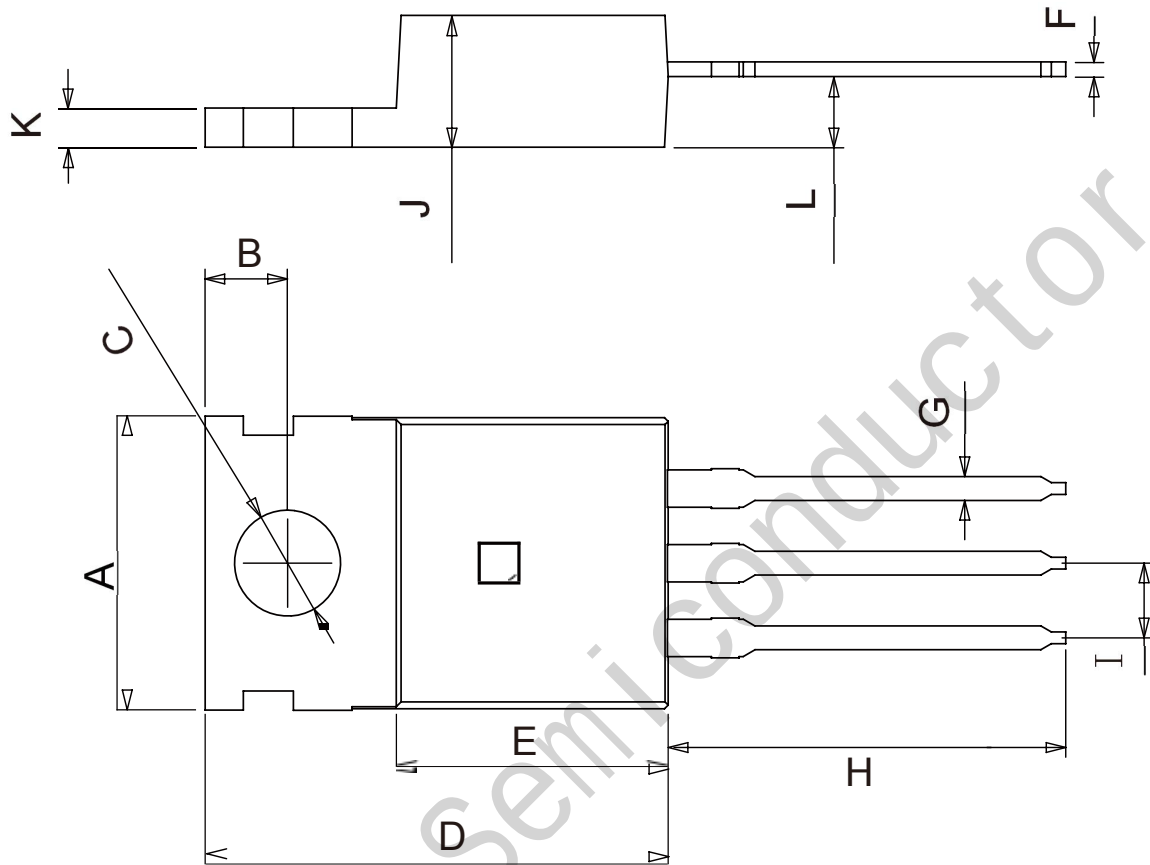


Figure 11. Transient Thermal Response Curve

TO-220Package Outline Data



COMMON DIMENSIONS			
UNITS MEASURE= MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	9.50	10.00	10.90
B	2.22	2.75	3.27
C	3.34	3.60	4.31
D	14.50	15.75	16.50
E	8.80	9.30	9.80
F	0.28	- -	0.64
G	0.68	- -	0.94
H	12.52	13.52	14.52
I	2.01	2.54	3.07
J	4.04	4.48	5.10
K	1.14	1.33	1.40
L	2.14	2.40	3.19

Unit:mm