

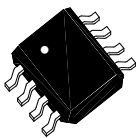
P-Channel Enhancement-Mode MOSFET (-30V, -12A)

PRODUCT SUMMARY

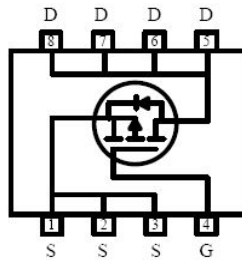
V_{DS}	I_D	$R_{DS(on)}$ (m-ohm) Max
-30V	-12A	12 @ $V_{GS} = -10V$, $I_D = -12A$
		15 @ $V_{GS} = -4.5V$, $I_D = -10A$

Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Lead free product is acquired



SOP-8



Pin 1 / 2 / 3: Source
Pin 4: Gate
Pin 5 / 6 / 7 / 8: Drain

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$, 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 @ $T_A = 25^\circ\text{C}$	-12	A
I_{DM}	Drain Current (Pulsed) ^a	-60	A
I_{AR}	Avalanche Current	30	A
E_{AR}	Repetitive Avalanche Energy $L = 0.3\text{mH}$	135	mJ
P_D	Total Power Dissipation @ $T_A = 25^\circ\text{C}$	3	W
	Total Power Dissipation @ $T_A = 75^\circ\text{C}$	2.1	
I_S	Maximum Diode Forward Current	-2.1	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted) ^b	50	$^\circ\text{C/W}$

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

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

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V	-	-	-1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±25V, V _{DS} =0V	-	-	±100	nA
• On Characteristics ^c						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-	-3.0	V
I _{DS(on)}	On State Drain Current	V _{DS} =-5V, V _{GS} =-10V	60	-	-	A
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-12A	-	-	12	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	-	10	
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-5A	-	26	-	S
• Dynamic Characteristics ^d						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	-	2076	2500	pF
C _{oss}	Output Capacitance		-	503	-	
C _{rss}	Reverse Transfer Capacitance		-	302	423	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	1	2	3	Ω
• Switching Characteristics ^d						
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-12A, V _{GS} =-10V	-	37.2	-	nC
Q _{gs}	Gate-Source Charge		-	7	-	
Q _{gd}	Gate-Drain Charge		-	10.4	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =-15V, R _L =1.25Ω, V _{GS} =-10V, R _G =3Ω	-	12.4	-	nS
t _r	Turn-on Rise Time		-	8.2	-	
t _{d(off)}	Turn-off Delay Time		-	25.6	-	
t _f	Turn-off Fall Time		-	12	-	
t _{rr}	Reverse Recovery Time	I _{DS} =-12A, dI/ dt=100A/ uS	-	33	40	nS
Q _{rr}	Reverse Recovery Charge		-	23	-	nC
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =-1A	-	-	-1	V
I _S	Drain-Source Diode Forward Current		-	-	-4.2	A

Note: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Characteristics Curve

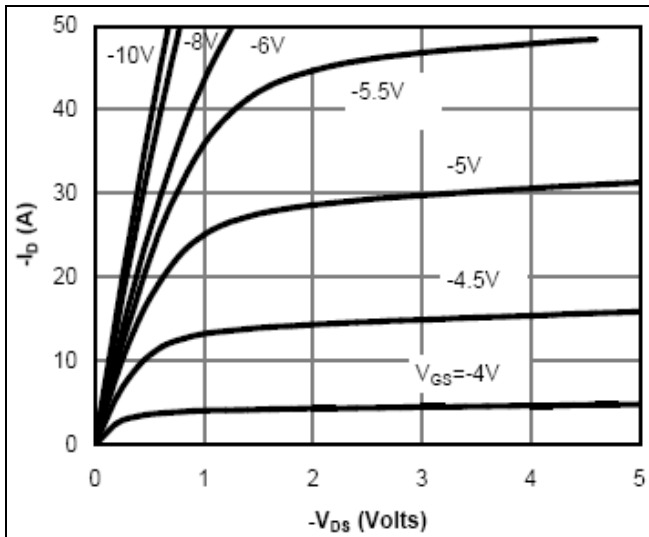


Fig 1: On-Region Characteristics

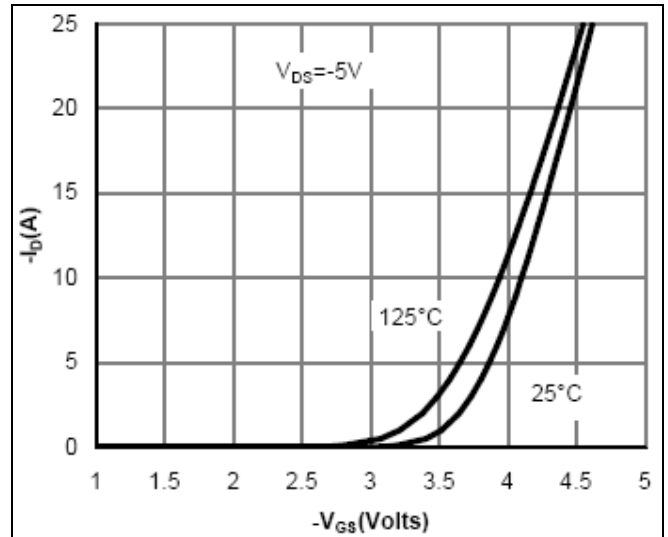


Figure 2: Transfer Characteristics

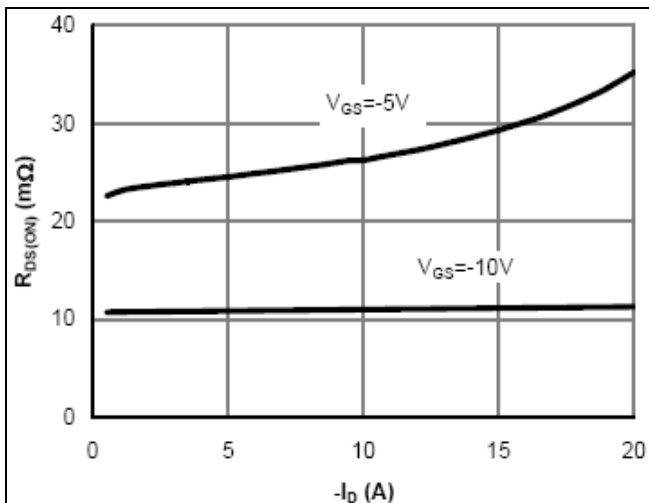


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

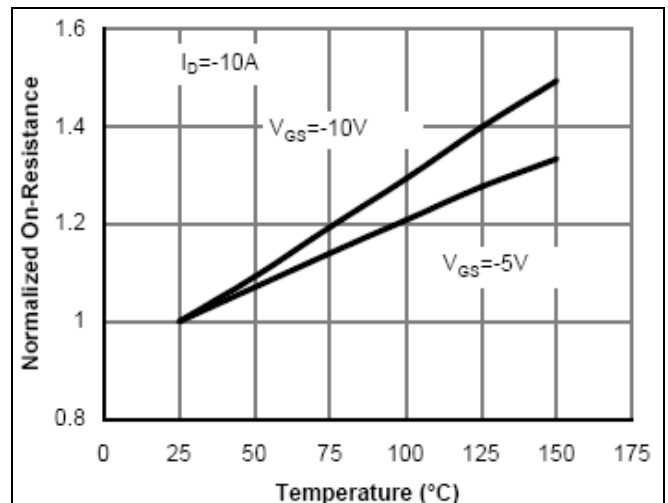


Figure 4: On-Resistance vs. Junction Temperature

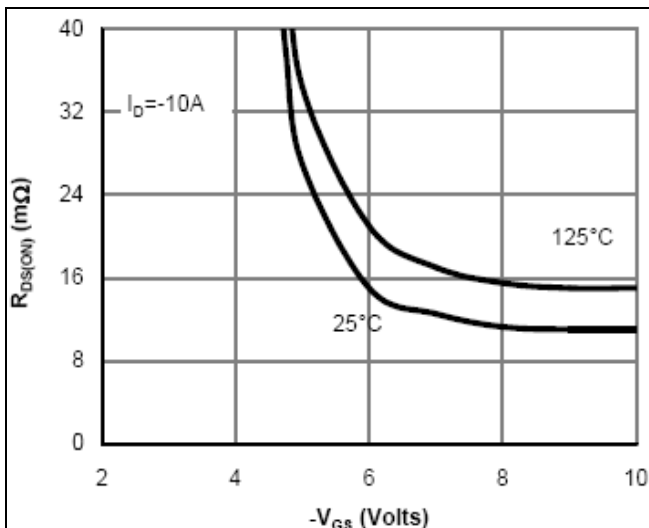


Figure 5: On-Resistance vs. Gate-Source Voltage

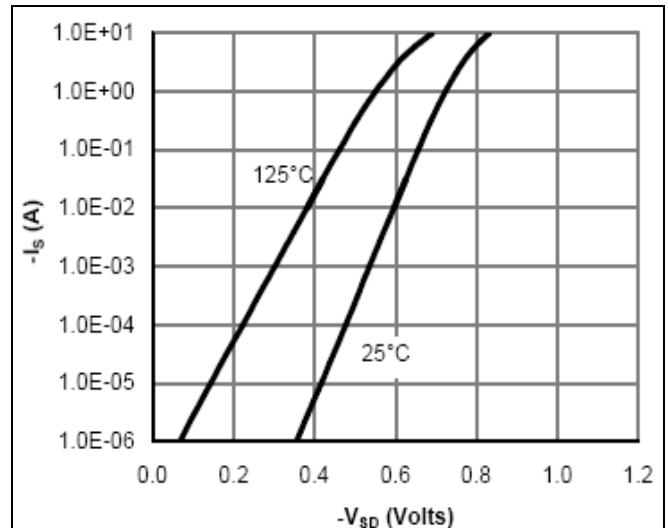


Figure 6: Body-Diode Characteristics

Characteristics Curve

