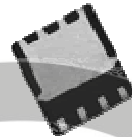


P-Channel 30-V (D-S) MOSFET

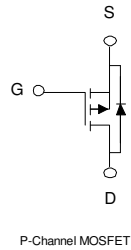
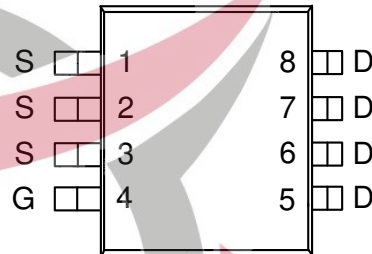
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-30	13 @ $V_{GS} = -10V$	-13.4
	19 @ $V_{GS} = -4.5V$	-11.1

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN3x3-8PP saves board space
- Fast switching speed
- High performance trench technology



DFN3x3-8PP
Top View



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ C$	-13.4	A
	$T_A = 70^\circ C$	-11.0	
Pulsed Drain Current ^b	I_{DM}	± 50	
Continuous Source Current (Diode Conduction) ^a	I_S	-2.1	A
Power Dissipation ^a	$T_A = 25^\circ C$	3.5	W
	$T_A = 70^\circ C$	2.0	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	35	$^\circ C/W$
	Steady State	81	$^\circ C/W$

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

SPECIFICATIONS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 25 \text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
		$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-5	
On-State Drain Current ^A	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	-50			A
Drain-Source On-Resistance ^A	$r_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -11.5 \text{ A}$			13	mΩ
		$V_{GS} = -4.5 \text{ V}, I_D = -9.3 \text{ A}$			19	
Forward Transconductance ^A	g_{fs}	$V_{DS} = -15 \text{ V}, I_D = -11.5 \text{ A}$		29		S
Diode Forward Voltage	V_{SD}	$I_S = 2.5 \text{ A}, V_{GS} = 0 \text{ V}$		-0.8		V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -15 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -11.5 \text{ A}$		25		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			17		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 6 \Omega, I_D = -1 \text{ A}, V_{GEN} = -10 \text{ V}$		15		nS
Rise Time	t_r			13		
Turn-Off Delay Time	$t_{d(off)}$			100		
Fall-Time	t_f			54		

Notes

- Pulse test: $PW \leq 300 \mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

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Typical Electrical Characteristics (P-Channel)

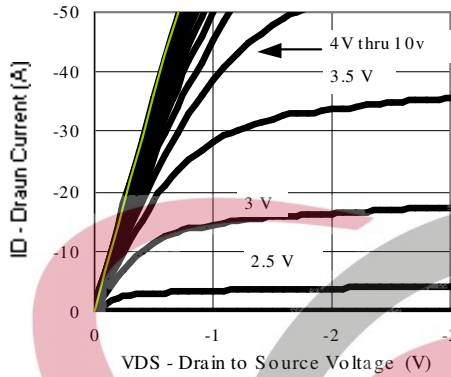


Figure 1. On-Region Characteristics

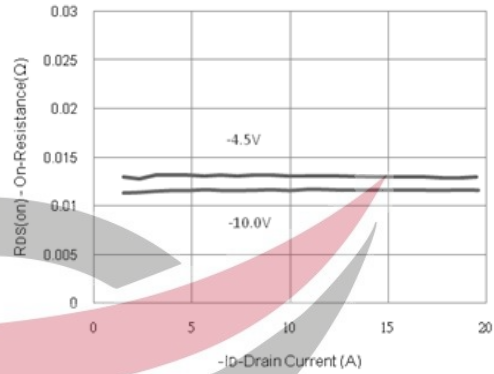


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

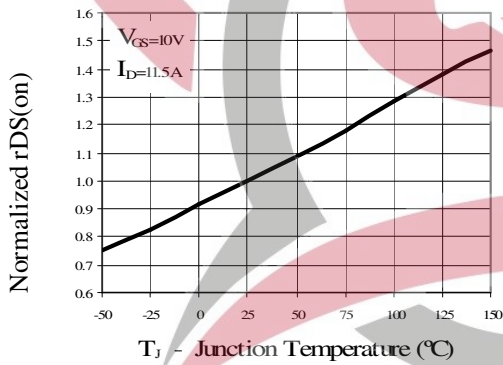


Figure 3. On-Resistance Variation with Temperature

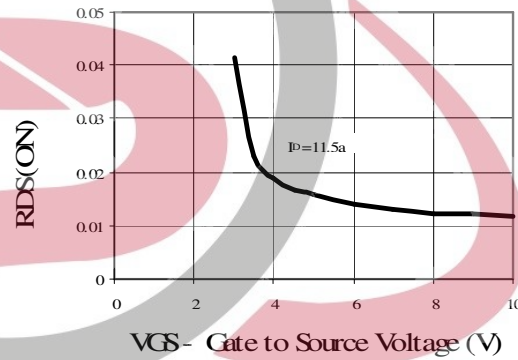


Figure 4. On-Resistance with Gate to Source Voltage

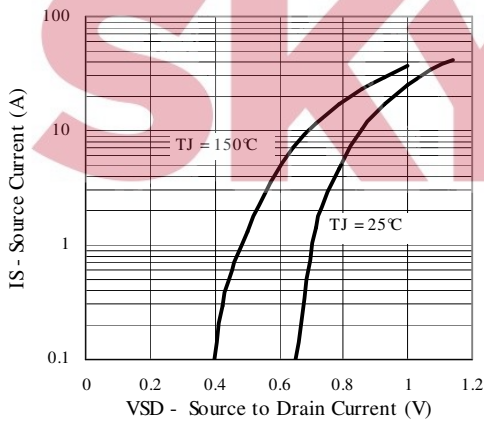


Figure 5. Transfer Characteristics

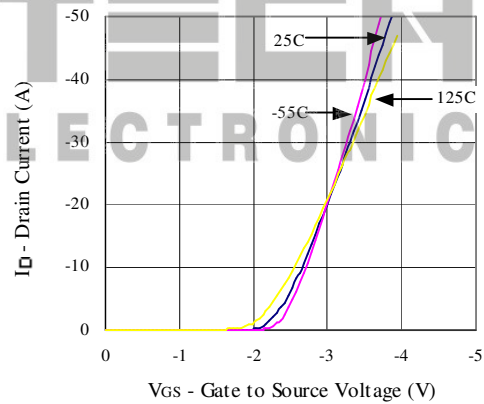


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics (P-Channel)

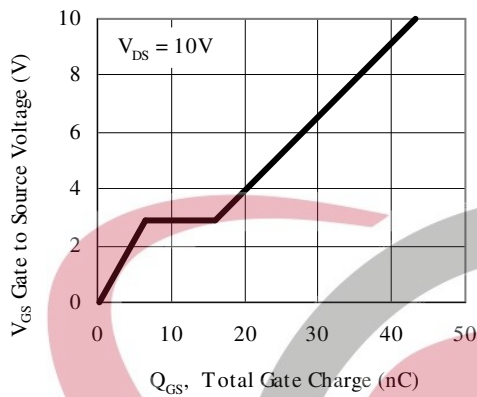


Figure 7. Gate Charge Characteristics

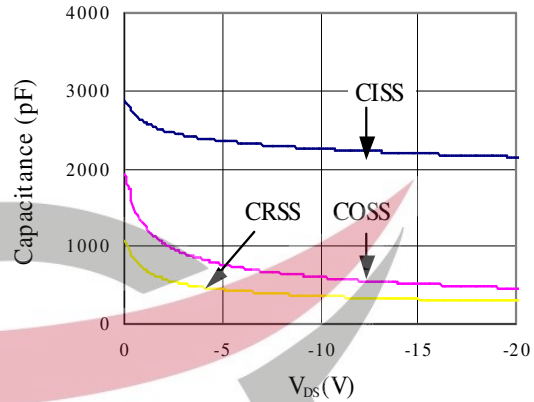


Figure 8. Capacitance Characteristics

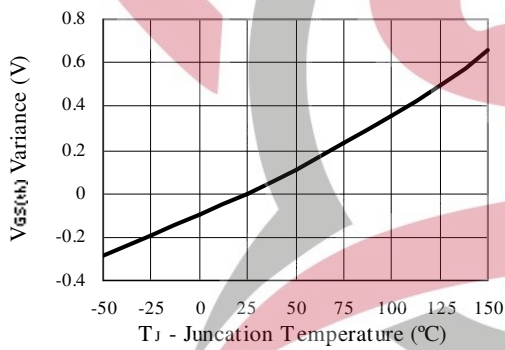


Figure 9. Maximum Safe Operating Area

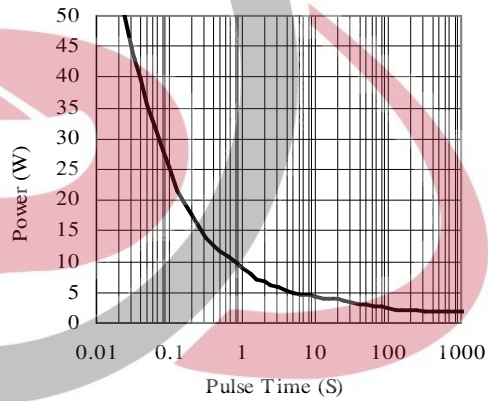


Figure 10. Single Pulse Maximum Power Dissipation

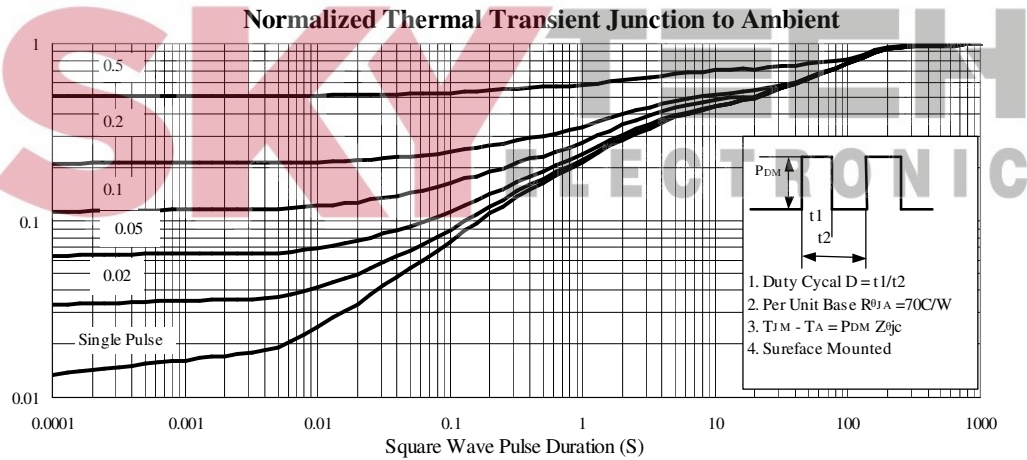


Figure 11. Transient Thermal Response Curve

Package Information

