

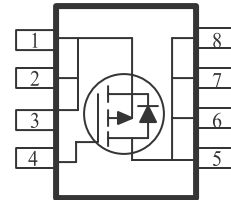
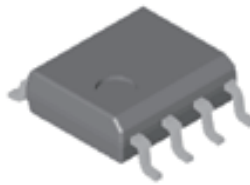
P-Channel 20-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature SO-8 Surface Mount Package Saves Board Space
- High power and current handling capability

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-20	20 @ $V_{GS} = -4.5V$	10.2
	29 @ $V_{GS} = -2.5V$	8.5
	54 @ $V_{GS} = -1.8V$	6.2



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current ^a	$T_A = 25^\circ C$	I_D	10.2	A
	$T_A = 70^\circ C$		8.2	
Pulsed Drain Current ^b		I_{DM}	± 30	
Continuous Source Current (Diode Conduction) ^a		I_S	-2.3	A
Power Dissipation ^a	$T_A = 25^\circ C$	P_D	3.1	W
	$T_A = 70^\circ C$		2	
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	$R_{\theta JA}$	50	$^\circ C/W$
	Steady State		92	$^\circ C/W$

Notes

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

SPECIFICATIONS (T _A = 25°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 = -350 uA	-0.7			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16 V, V _{GS} = 0 V			-1	uA
		V _{DS} = -16 V, V _{GS} = 0 V, T _J = 55°C			-10	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -4.5 V	-20			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -10.2 A			20	mΩ
		V _{GS} = -2.5 V, I _D = -8.5 A			29	
		V _{GS} = -1.8 V, I _D = -6.2 A			54	
Forward Tranconductance ^A	g _{fs}	V _{DS} = -10 V, I _D = -10.2 A		36		S
Diode Forward Voltage	V _{SD}	I _S = -2.3 A, V _{GS} = 0 V		-0.8		V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -5 V, I _D = -10.2 A		30		nC
Gate-Source Charge	Q _{gs}			4		
Gate-Drain Charge	Q _{gd}			6		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, R _L = 15 Ω , I _D = -1 A, V _{GEN} = -5 V, R _G = 6Ω		25		nS
Rise Time	t _r			45		
Turn-Off Delay Time	t _{d(off)}			150		
Fall-Time	t _f			70		

Notes

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

Typical Electrical Characteristics

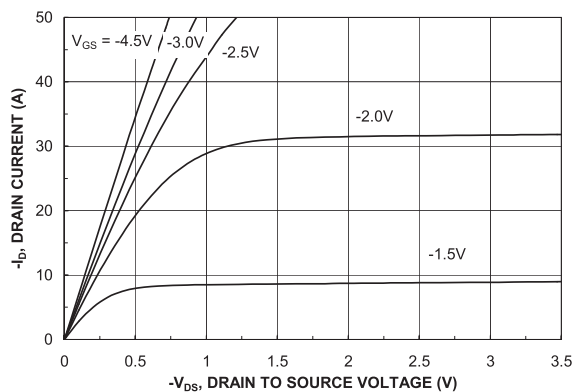


Figure 1. Output Characteristics

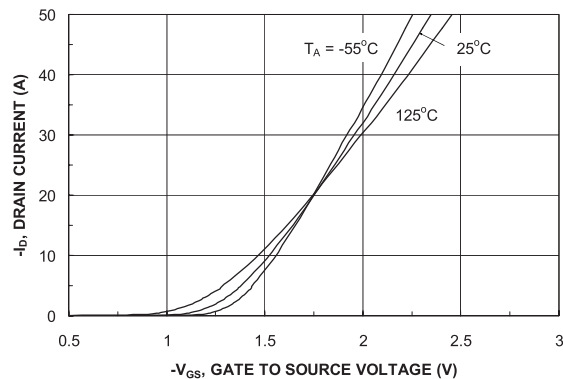


Figure 2. Transfer Characteristics

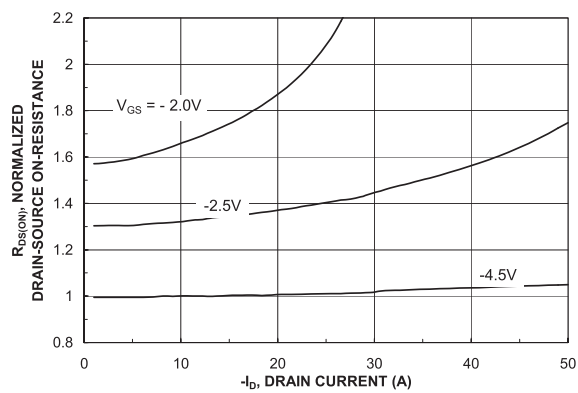


Figure 3. On Resistance vs. Drain Current

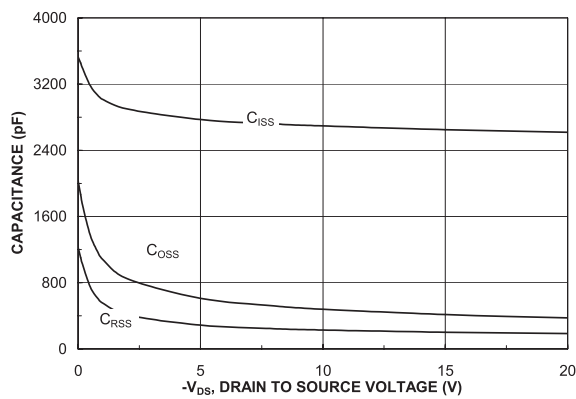


Figure 4. Capacitance

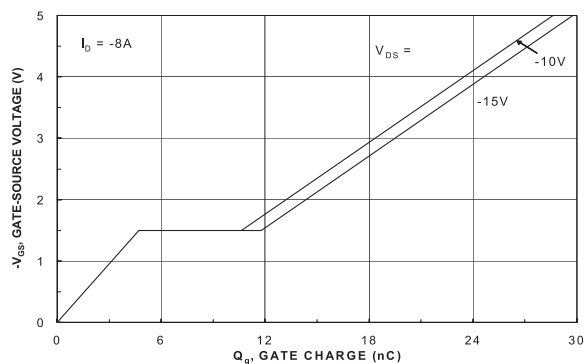


Figure 5. Gate Charge

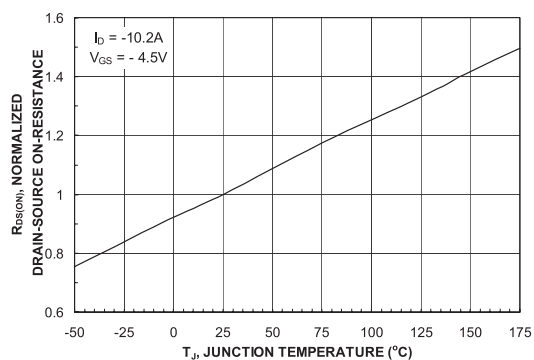


Figure 6. On-Resistance vs. Junction Temperature

Typical Electrical Characteristics

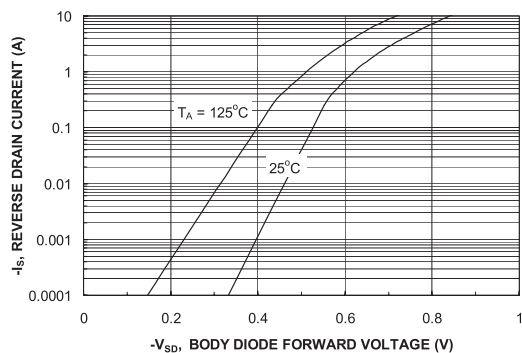


Figure 7. Source-Drain Diode Forward Voltage

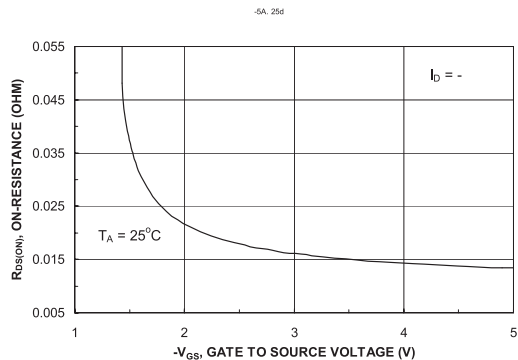


Figure 8. On-Resistance vs. Gate-to-Source Voltage

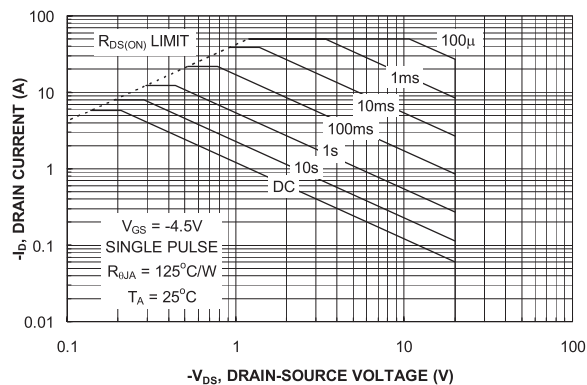


Figure 9. Safe Operating Area

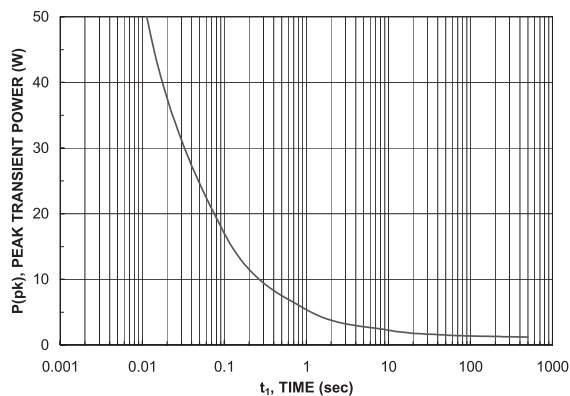


Figure 10. Single Pulse Power, Junction-to-Ambient

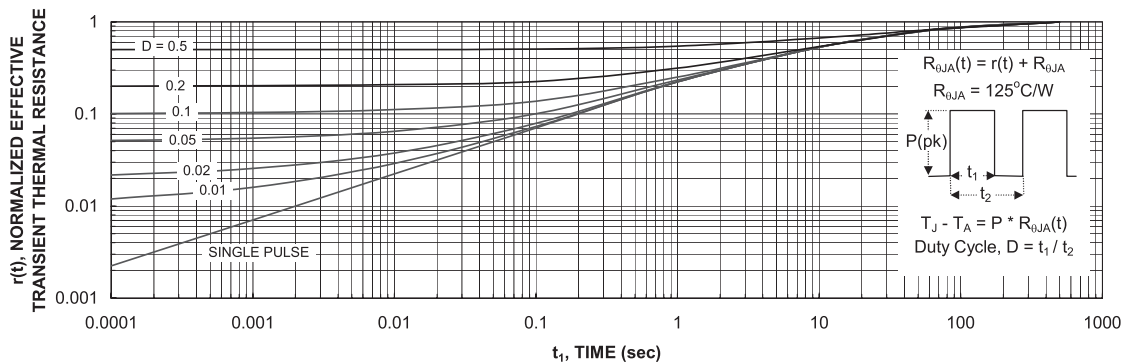
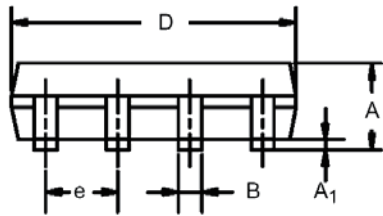
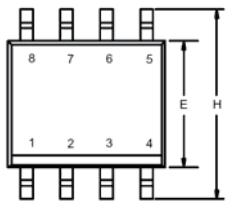


Figure 11. Normalized Thermal Transient Impedance, Junction-to-Ambient

Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A ₁	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°

