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

### **Key Features:**

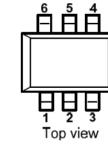
- Low r<sub>DS(on)</sub> trench technology
- · Low thermal impedance
- · Fast switching speed

### **Typical Applications:**

- Battery Powered Instruments
- Portable Computing
- Mobile Phones
- · GPS Units and Media Players

Pb-free	
RoHS COMPLIANT HALOGEN	

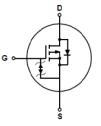
PRODUCT SUMMARY			
Vds (V)	$r_{DS(on)}(m\Omega)$	I⊳(A)	
-20	34 @ V <sub>GS</sub> = -4.5V	-5	
-20	48 @ V <sub>GS</sub> = -2.5V	-3	



T<sub>A</sub>=25°C

 $P_{D}$ 

T<sub>J</sub>, T<sub>stq</sub>



Drain: 1,2,5,6 Gate: 3

TSOP6

Source: 4

1.40

-55 to 150

W °C

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}C$ UNLESS OTHERWISE NOTED)					
Parameter		Symbol	Limit	Units	
Drain-Source Voltage		V <sub>DS</sub>	-20	V	
Gate-Source Voltage		V <sub>GS</sub>	±12	V	
Constitution Desire Consent <sup>a</sup>	T <sub>A</sub> =25°C	I	-5		
Continuous Drain Current <sup>a</sup>	T <sub>A</sub> =100°C	I <sub>D</sub>	-3.3	A	
Pulsed Drain Current <sup>b</sup>	-	I <sub>DM</sub>	-20	1	
Continuous Source Current (Diode Conduction) <sup>a</sup>		ا <sub>s</sub>	-1	А	

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	t <= 10 sec	R <sub>eja</sub>	62.5	°C/W
	Steady State	' <b>`</b> θJA	110	C/ VV

Notes

Power Dissipation<sup>a</sup>

a. Surface Mounted on 1" x 1" FR4 Board.

Operating Junction and Storage Temperature Range

b. Pulse width limited by maximum junction temperature

# **Electrical Characteristics**

Parameter	Symbol	Test Conditions	Min	Тур	Max	Unit
Static						
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \text{ uA}$	-20			V
Gate-Body Leakage	I <sub>GSS</sub>	$V_{DS} = 0 V, V_{GS} = \pm 12 V$			±10	uA
Zero Gate Voltage Drain Current		$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	uA
	DSS	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 85^{\circ}\text{C}$			-30	
On-State Drain Current	I <sub>D(on)</sub>	$V_{DS} = -5 \text{ V}, \text{ V}_{GS} = -4.5 \text{ V}$	10			Α
Drain-Source On-Resistance	r	$V_{GS} = -4.5 \text{ V}, \text{ I}_{D} = -5 \text{ A}$			34	mΩ
Drain-Source On-Resistance	r <sub>DS(on)</sub>	$V_{GS} = -2.5 \text{ V}, \text{ I}_{D} = -3 \text{ A}$			48	11152
Forward Transconductance	<b>g</b> <sub>fs</sub>	$V_{DS} = -15 \text{ V}, \text{ I}_{D} = -5 \text{ A}$		10		S
Diode Forward Voltage	V <sub>SD</sub>	$I_{S} = -1.0 \text{ A}, V_{GS} = 0 \text{ V}$		-0.7		V
	Dynamic					
Total Gate Charge	Qg			16		
Gate-Source Charge	$Q_gs$	$V_{DS} = -10 \text{ V}, \text{ V}_{GS} = -4.5 \text{ V}, \text{ I}_{D} = -5 \text{ A}$		4		nC
Gate-Drain Charge	Q <sub>gd</sub>			5		
Turn-On Delay Time	t <sub>d(on)</sub>			6		
Rise Time	t <sub>r</sub>	$V_{DD}$ = -10 V, $R_L$ = 10 $\Omega$ , $I_D$ = -1 A,		12		20
Turn-Off Delay Time	t <sub>d(off)</sub>	$V_{GEN}$ = -4.5 V, $R_{GEN}$ = 6 $\Omega$		75		ns
Fall Time	t <sub>f</sub>			38		
Input Capacitance	C <sub>iss</sub>			1450		
Output Capacitance	C <sub>oss</sub>	$V_{DS}$ = -10 V, $V_{GS}$ = 0 V, f = 1 MHz		200		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			165		

#### Notes

- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.

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20

On Resistance

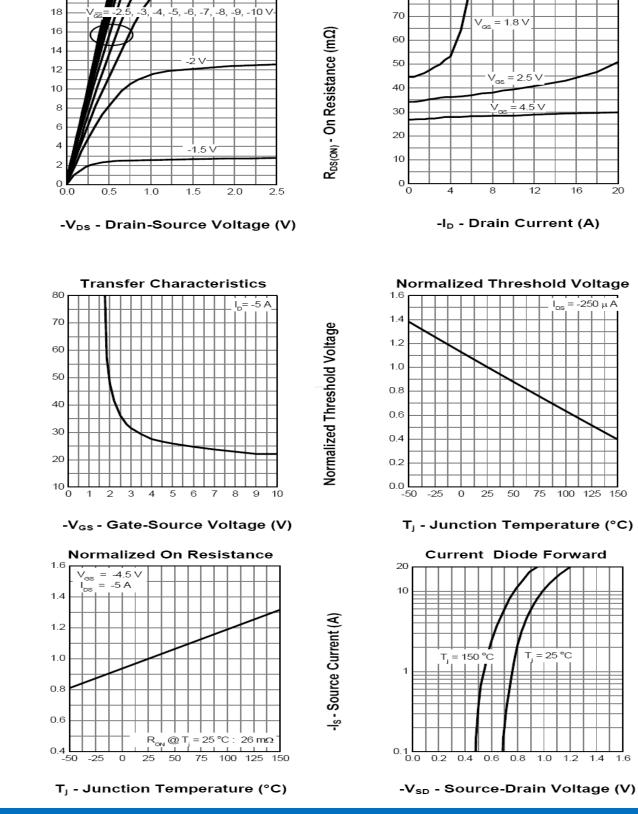


80

Output Characteristics

-l<sub>D</sub> - Drain Current (A)

 $R_{DS(ON)}$  - On Resistance (m $\Omega$ )

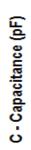


Normalized On Resistance

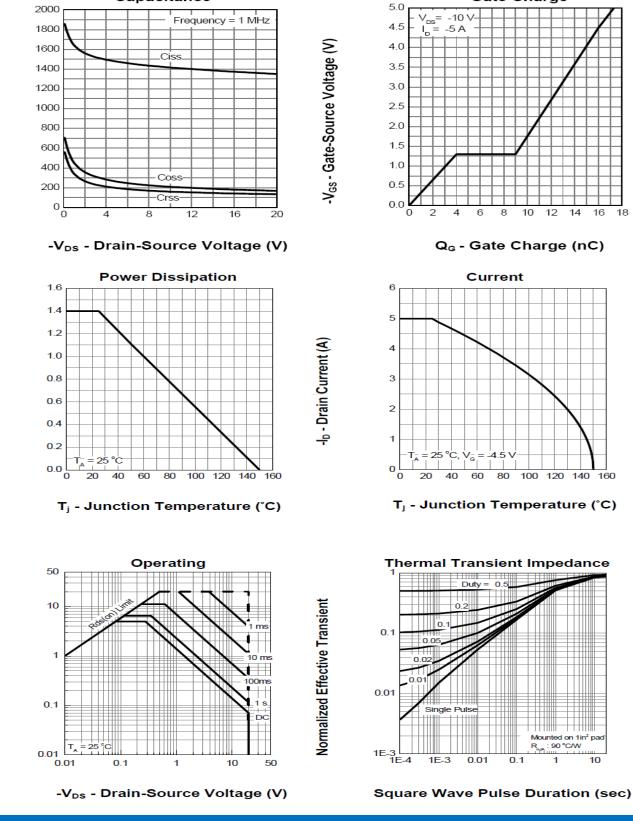
Gate Charge

# **Typical Electrical Characteristics**

Capacitance



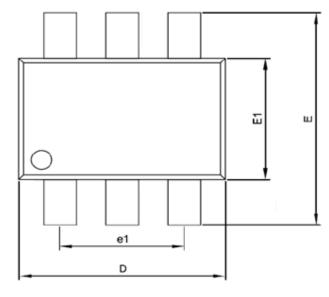
P<sub>tot</sub> - Power (W)

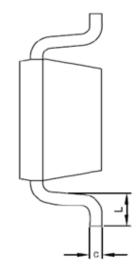


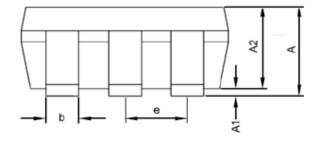
-I<sub>D</sub> - Drain Current (A)

# Package Information

## TSOP6







Symphol	Dimensions In Millimeters		
Symbol	MIN.	MAX.	
A	1.45		
A1		0.15	
A2	0.9	1.3	
D	2.90 BSC		
E	2.890 BSC		
E1	1.5	1.7	
С	0.08	0.25	
b	0.3	0.5	
е	0.95BSC		
e1	1.90BSC		
L	0.3	0.6	