TP1220L, TP2020L
P-Channel Enhancement-Mode MOS Transistors
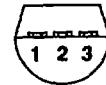
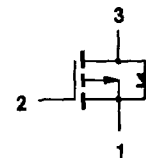**Siliconix** incorporated

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
TP1220L	–120	20	–0.12
TP2020L	–200	20	–0.12

Performance Curves: VPDQ20

TO-92 (TO-226AA)   BOTTOM VIEW

1 2 3

1 SOURCE
2 GATE
3 DRAIN

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS		UNITS
			TP1220L	TP2020L	
Drain-Source Voltage		V_{DS}	–120	–200	V
Gate-Source Voltage		V_{GS}	±20	±20	
Continuous Drain Current	T_A = 25°C	I_D	–0.12	–0.12	
	T_A = 100°C		–0.08	–0.08	A
Pulsed Drain Current[1]		I_{DM}	–0.48	–0.48	
Maximum Power Dissipation	T_A = 25°C	P_D	0.80	0.80	W
	T_A = 100°C		0.32	0.32	
Operating Junction & Storage Temperature Range		T_J, T_{stg}	–55 to 150		°C
Lead Temperature (1/16" from case for 10 sec.)		T_L	300		

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	LIMITS	UNITS
Junction-to-Ambient	R_{thJA}	156	K/W

[1]Pulse width limited by maximum junction temperature.

$\boxed{\text{S}}$ Siliconix incorporated

SPECIFICATIONS[a]				LIMITS			
PARAMETER	SYMBOL	TEST CONDITIONS		TYP[b]	MIN	MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0$ V	TP1220L	–200	–120		
		$I_D = -10$ µA	TP2020L	–220	–200		V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -1$ mA		–1.9	–1	–2.4	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 20$ V				±10	nA
			$T_J = 125°C$			±50	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 0.8 \times V_{(BR)DSS}$, $V_{GS} = 0$ V				–1	µA
			$T_J = 125°C$			–100	
On-State Drain Current [c]	$I_{D(ON)}$	$V_{DS} = -10$ V, $V_{GS} = -4.5$ V		–250	–50		mA
Drain-Source On-Resitance[c]	$r_{DS(ON)}$	$V_{GS} = -4.5$ V, $I_D = -50$ mA		15		20	Ω
			$T_J = 125°C$	30		40	
		$V_{GS} = -10$ V, $I_D = -100$ mA		15		20	
Forward Transconductance[c]	g_{FS}	$V_{DS} = -10$ V, $I_D = -100$ mA		100	60		mS
DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0$ V, $V_{DS} = -25$ V, $f = 1$ MHz		30		60	pF
Output Capacitance	C_{oss}			10		20	
Reverse Transfer Capacitance	C_{rss}			2		10	
SWITCHING							
Turn-On Time	t_{ON}	$V_{DD} = -25$ V, $R_L = 250$ Ω, $I_D = -0.1$ A $V_{GEN} = -10$ V, $R_G = 25$ Ω		15		25	ns
Turn-Off Time	t_{OFF}	(Switching time is essentially independent of operating temperature)		35		55	

NOTES:
a. $T_A = 25°C$ unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test: Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.

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