

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

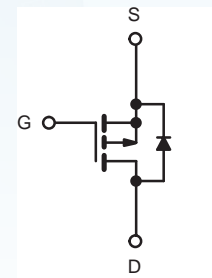
▶ Domestic	Part Number	TPC8107
▶ Overseas	Part Number	TPC8107
▶ Equivalent	Part Number	TPC8107

EV is the abbreviation of name EVVO

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

### PRODUCT SUMMARY

V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (mΩ)	I <sub>D</sub> (A) <sup>d</sup>	Q <sub>g</sub> (Typ.)
- 30	11 at V <sub>GS</sub> = - 10 V	- 13.5	29.5 nC
	15 at V <sub>GS</sub> = - 4.5 V	- 11.6	

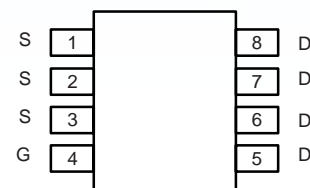


P-Channel MOSFET

### APPLICATIONS

- Load Switch
- Notebook Adaptor Switch

### SOP-8



Top View

### ABSOLUTE MAXIMUM RATINGS T<sub>A</sub> = 25 °C, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	- 30	V
Gate-Source Voltage	V <sub>GS</sub>	± 20	
Continuous Drain Current (T <sub>J</sub> = 150 °C)	I <sub>D</sub>	T <sub>C</sub> = 25 °C	- 13.5
		T <sub>C</sub> = 70 °C	- 11.9
		T <sub>A</sub> = 25 °C	- 10.9 <sup>a, b</sup>
		T <sub>A</sub> = 70 °C	- 8.6 <sup>a, b</sup>
Pulsed Drain Current	I <sub>DM</sub>	- 50	A
Continuous Source-Drain Diode Current	I <sub>S</sub>	T <sub>C</sub> = 25 °C	
		T <sub>A</sub> = 25 °C	- 2.2 <sup>a, b</sup>
Avalanche Current	I <sub>AS</sub>	- 20	mJ
Single-Pulse Avalanche Energy	E <sub>AS</sub>	20	
Maximum Power Dissipation	P <sub>D</sub>	T <sub>C</sub> = 25 °C	5.0
		T <sub>C</sub> = 70 °C	3.2
		T <sub>A</sub> = 25 °C	2.7 <sup>a, b</sup>
		T <sub>A</sub> = 70 °C	1.7 <sup>a, b</sup>
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	- 55 to 150	°C

### THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a, c</sup>	R <sub>thJA</sub>	38	46	°C/W
Maximum Junction-to-Foot	R <sub>thJF</sub>	20	25	

Notes:

- Surface mounted on 1" x 1" FR4 board.
- t = 10 s.
- Maximum under Steady State conditions is 85 °C/W.
- Based on T<sub>C</sub> = 25 °C.

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

**SPECIFICATIONS**  $T_J = 25\text{ }^\circ\text{C}$ , unless otherwise noted

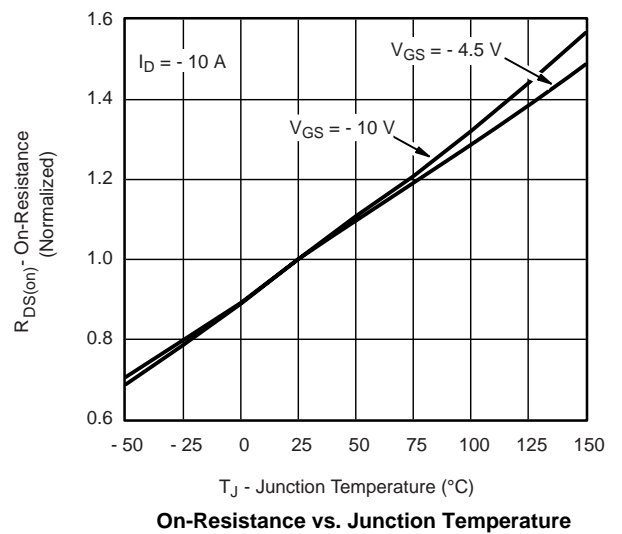
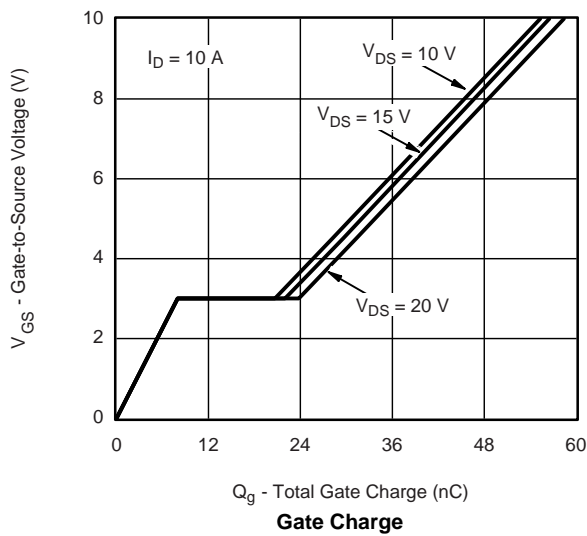
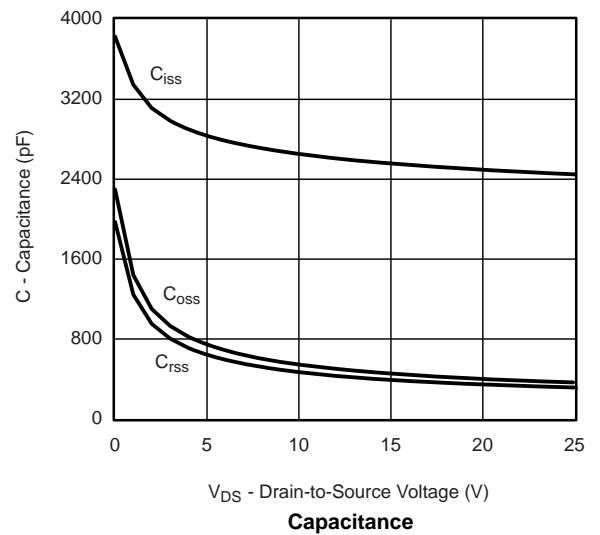
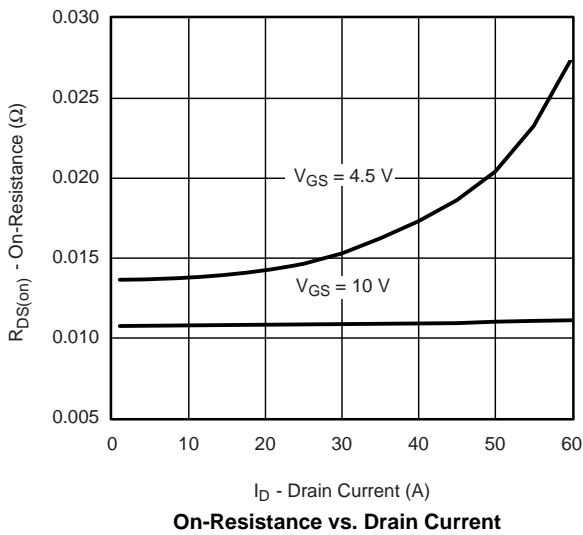
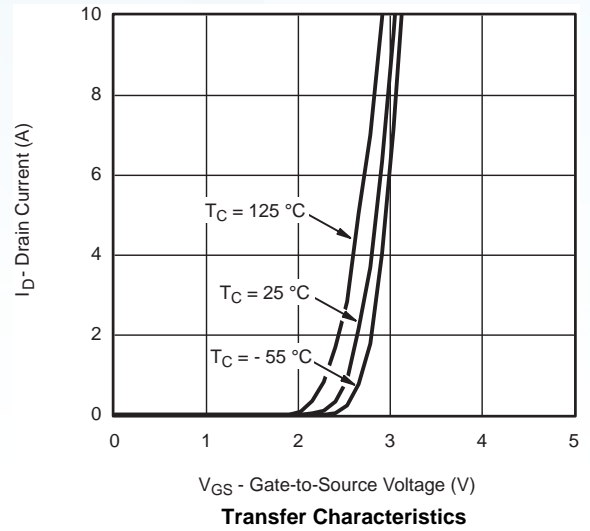
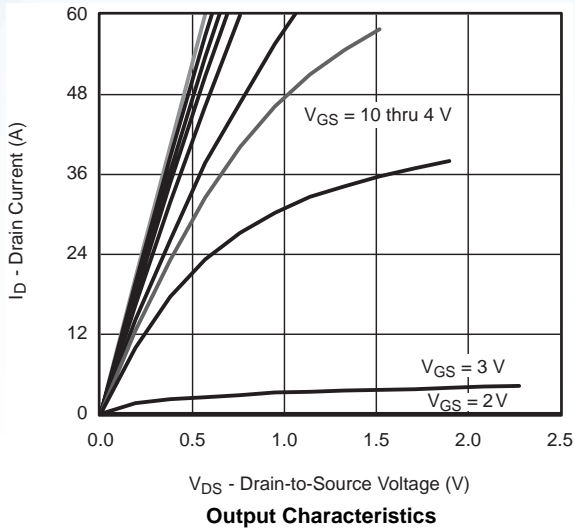
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{DS}$	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	-30			V
$V_{DS}$ Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250\text{ }\mu\text{A}$		-34		mV/ °C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		5.3			
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-1.4		-2.5	V
Gate-Source Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 25\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			-5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq -10\text{ V}, V_{GS} = -10\text{ V}$	-30			A
Drain-Source On-State Resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -10\text{ A}$		11		m $\Omega$
		$V_{GS} = -4.5\text{ V}, I_D = -8\text{ A}$		15		
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -10\text{ V}, I_D = -10\text{ A}$		28		S
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = -15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		2550		pF
Output Capacitance	$C_{oss}$		455			
Reverse Transfer Capacitance	$C_{rss}$		390			
Total Gate Charge	$Q_g$	$V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, I_D = -10\text{ A}$		57	86	nC
				29.5	45	
Gate-Source Charge	$Q_{gs}$	$V_{DS} = -15\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -10\text{ A}$		8		nC
Gate-Drain Charge	$Q_{gd}$			22		
Gate Resistance	$R_g$		$f = 1\text{ MHz}$	0.5	2.2	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 1.5\text{ }\Omega$ $I_D \cong -10\text{ A}, V_{GEN} = -10\text{ V}, R_g = 1\text{ }\Omega$		13	25	ns
Rise Time	$t_r$			12	24	
Turn-Off Delay Time	$t_{d(off)}$			40	70	
Fall Time	$t_f$			9	18	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15\text{ V}, R_L = 1.5\text{ }\Omega$ $I_D \cong -10\text{ A}, V_{GEN} = -4.5\text{ V}, R_g = 1\text{ }\Omega$		48	80	ns
Rise Time	$t_r$			92	160	
Turn-Off Delay Time	$t_{d(off)}$			34	60	
Fall Time	$t_f$			19	35	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Source-Drain Diode Current	$I_S$	$T_C = 25\text{ }^\circ\text{C}$			-4.1	A
Pulse Diode Forward Current	$I_{SM}$				-60	
Body Diode Voltage	$V_{SD}$	$I_S = -3\text{ A}, V_{GS} = 0\text{ V}$		-0.75	-1.2	V
Body Diode Reverse Recovery Time	$t_{rr}$	$I_F = -10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		27	45	ns
Body Diode Reverse Recovery Charge	$Q_{rr}$			16	27	nC
Reverse Recovery Fall Time	$t_a$			12		ns
Reverse Recovery Rise Time	$t_b$			15		

Notes:

- a. Pulse test; pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ .
- b. Guaranteed by design, not subject to production testing.

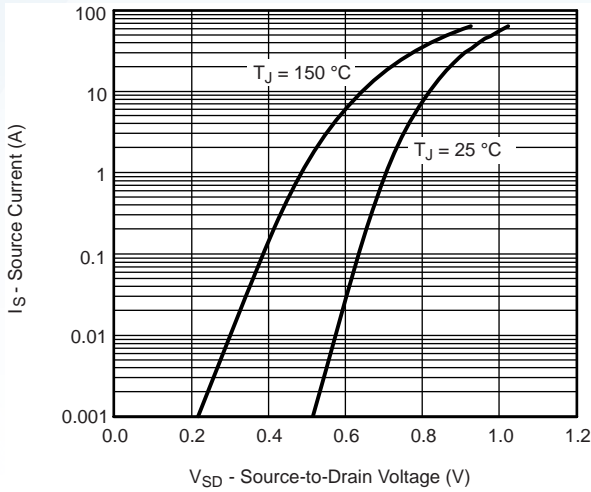
**P-Channel 30 V (D-S) MOSFET**

**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted

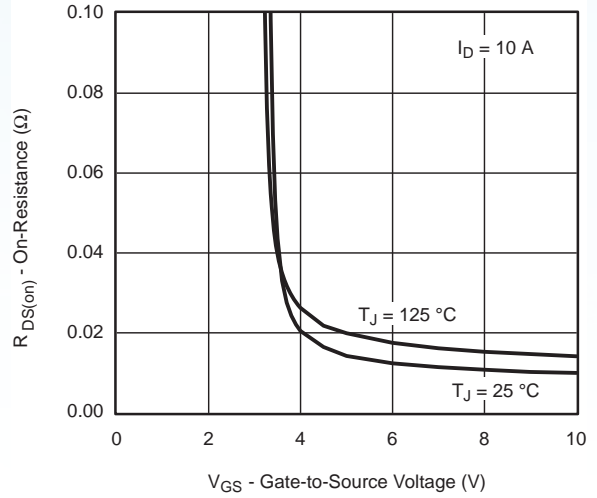


**P-Channel 30 V (D-S) MOSFET**

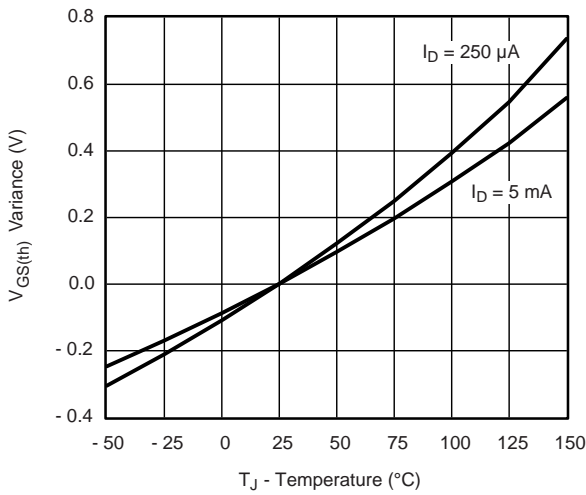
**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted



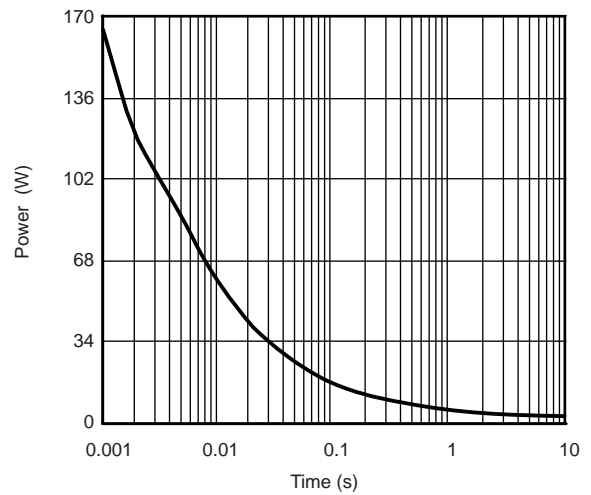
**Source-Drain Diode Forward Voltage**



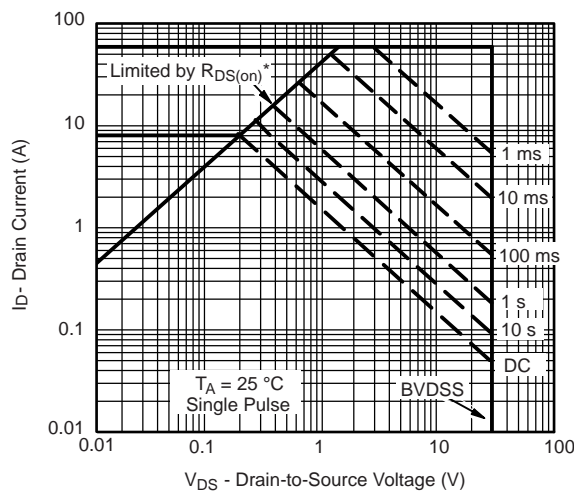
**On-Resistance vs. Gate-to-Source Voltage**



**Threshold Voltage**



**Single Pulse Power, Junction-to-Ambient**

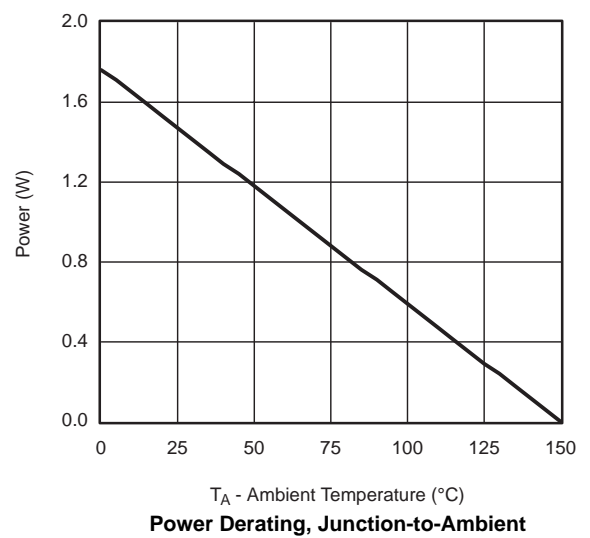
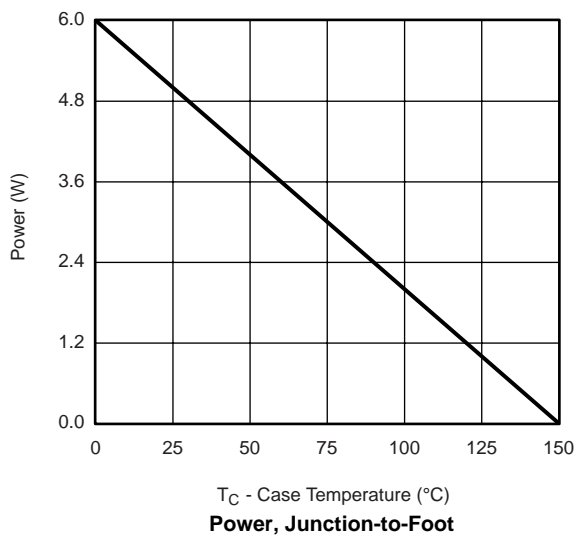
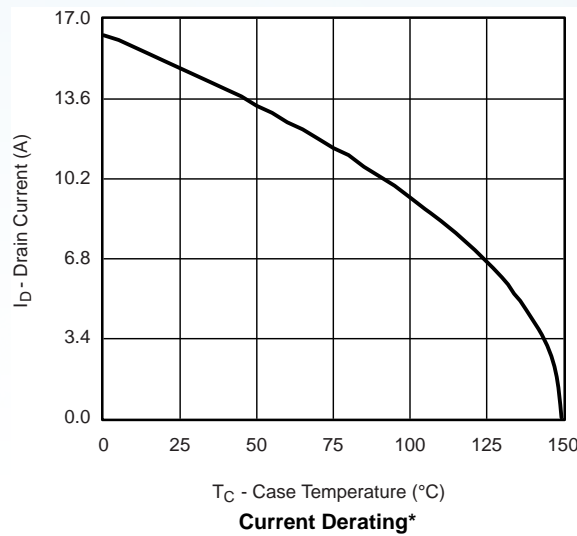


\*  $V_{GS} >$  minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified

**Safe Operating Area**

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

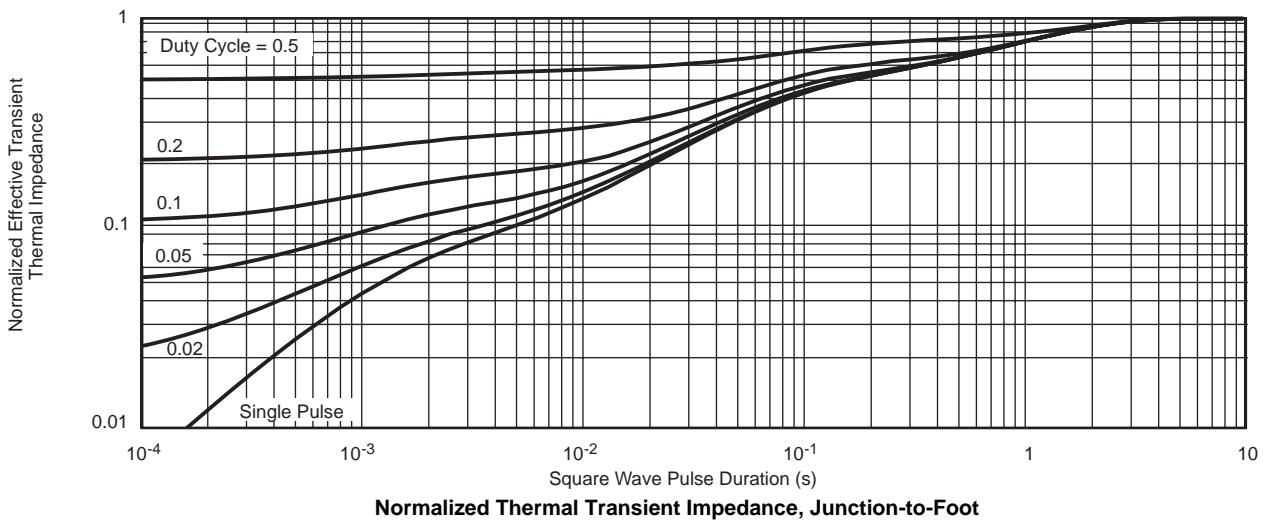
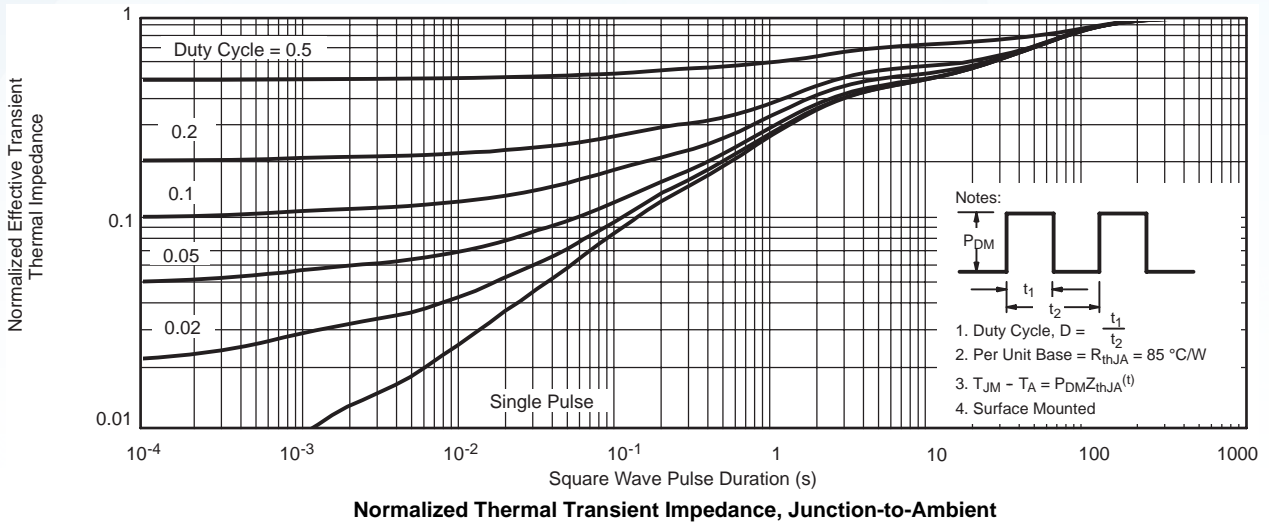
**MOSFET TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted



\* The power dissipation P<sub>D</sub> is based on T<sub>J(max)</sub> = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

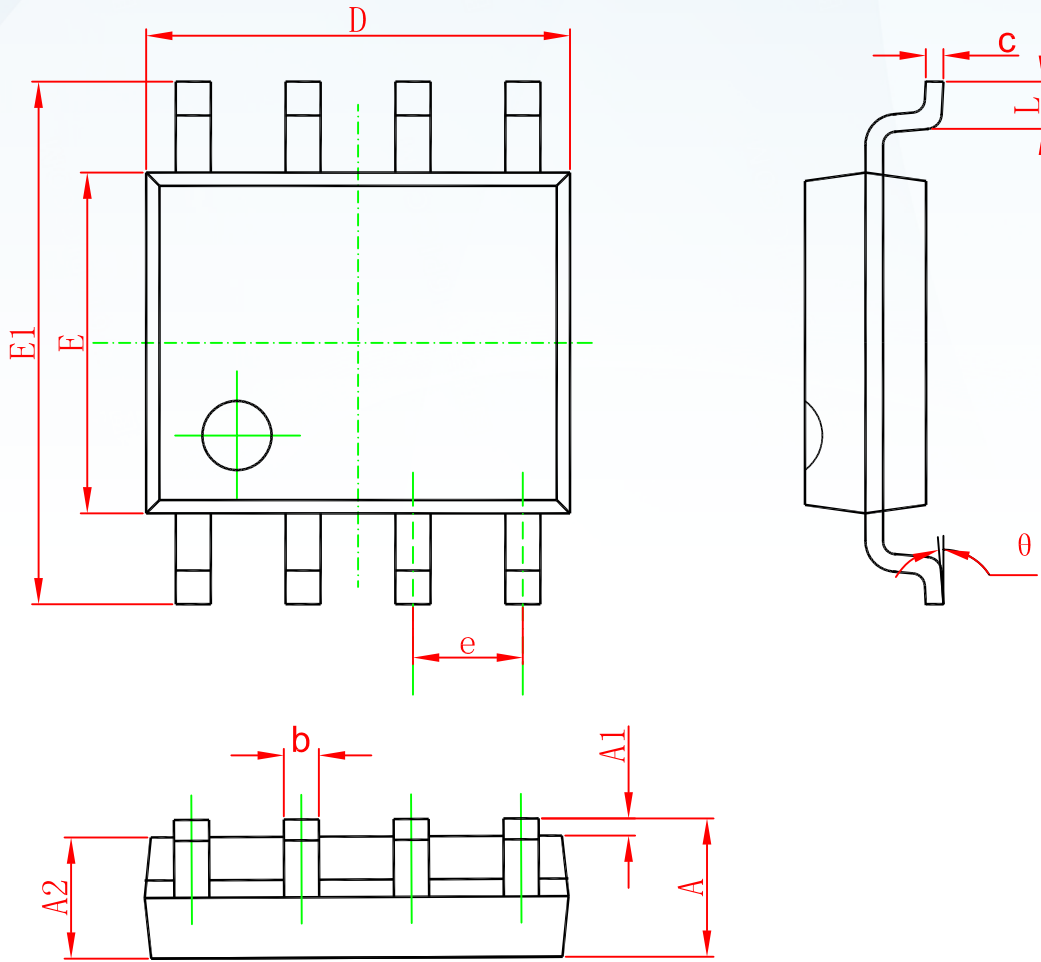
**P-Channel 30 V (D-S) MOSFET**

**TYPICAL CHARACTERISTICS** 25 °C, unless otherwise noted



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

**SOP-8**

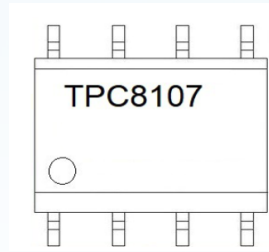


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
theta	0°	8°	0°	8°



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

**Marking**



**Ordering information**

Order code	Package	Baseqty	Deliverymode
TPC8107	SOP-8	3000	Tape and reel

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