

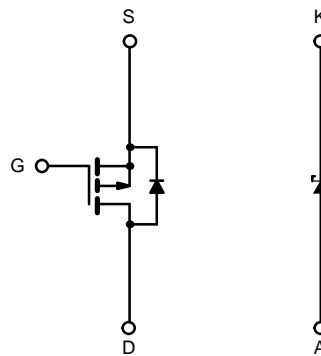
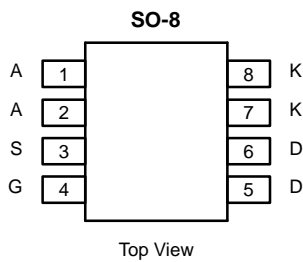


## P-Channel 30-V (D-S) MOSFET with Schottky Diode

MOSFET PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-30	0.045 @ $V_{GS} = -10$ V	$\pm 5$
	0.090 @ $V_{GS} = -4.5$ V	$\pm 3.5$

SCHOTTKY PRODUCT SUMMARY		
$V_{KA}$ (V)	$V_f$ (V) Diode Forward Voltage	$I_F$ (A)
30	0.53 V @ 3 A	3

LITTLE FOOT Plus™



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Limit	Unit
Drain-Source Voltage (MOSFET)		$V_{DS}$	-30	V
Reverse Voltage (Schottky)		$V_{KA}$	30	
Gate-Source Voltage (MOSFET)		$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) (MOSFET) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$I_D$	$\pm 5$	A
	$T_A = 70^\circ\text{C}$		$\pm 3.9$	
Pulsed Drain Current (MOSFET)		$I_{DM}$	$\pm 20$	
Continuous Source Current (MOSFET Diode Conduction) <sup>a, b</sup>		$I_S$	-1.7	
Average Forward Current (Schottky)		$I_F$	3	
Pulsed Forward Current (Schottky)		$I_{FM}$	20	
Maximum Power Dissipation (MOSFET) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$	$P_D$	2	W
	$T_A = 70^\circ\text{C}$		1.28	
Maximum Power Dissipation (Schottky) <sup>a, b</sup>	$T_A = 25^\circ\text{C}$		1.83	
	$T_A = 70^\circ\text{C}$		1.17	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

Notes

- a. Surface Mounted on FR4 Board.
- b.  $t \leq 10$  sec.



THERMAL RESISTANCE RATINGS					
Parameter	Device	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ( $t \leq 10$ sec) <sup>a</sup>	MOSFET	$R_{thJA}$	52	62.5	°C/W
	Schottky		56	68	
Maximum Junction-to-Ambient ( $t =$ steady state) <sup>a</sup>	MOSFET		82	100	
	Schottky		91	110	
Maximum Junction-to-Foot	MOSFET	$R_{thJF}$	27	33	
	Schottky		32	40	

## Notes

- a. Surface Mounted on FR4 Board.  
b.  $t \leq 10$  sec.

MOSFET SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1.0			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 75^\circ\text{C}$			-10	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq -5 \text{ V}, V_{GS} = -10 \text{ V}$	-20			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -5 \text{ A}$		0.036	0.045	$\Omega$
		$V_{GS} = -4.5 \text{ V}, I_D = -3.5 \text{ A}$		0.060	0.090	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = -15 \text{ V}, I_D = -5 \text{ A}$		9		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = -1.7 \text{ A}, V_{GS} = 0 \text{ V}$		-0.75	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15 \text{ V}, V_{GS} = -5 \text{ V}, I_D = -5 \text{ A}$		10	20	nC
Gate-Source Charge	$Q_{gs}$		4.5			
Gate-Drain Charge	$Q_{gd}$		3.6			
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 15 \Omega$ $I_D \cong -1 \text{ A}, V_{GEN} = -10 \text{ V}, R_G = 6 \Omega$		13	25	ns
Rise Time	$t_r$		15	30		
Turn-Off Delay Time	$t_{d(off)}$		37	70		
Fall Time	$t_f$		14	30		
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = -1.7 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		35	70	

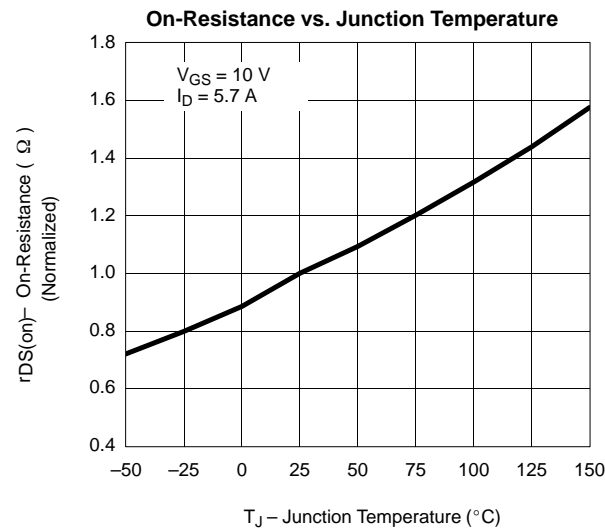
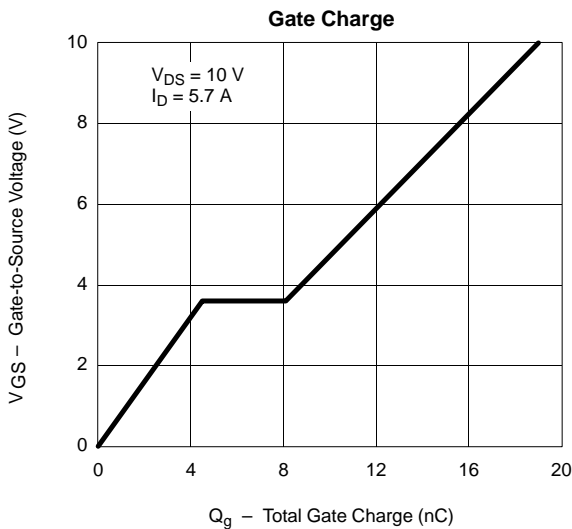
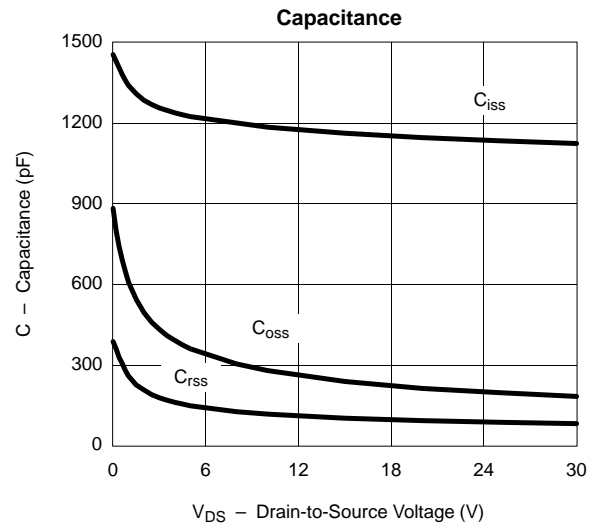
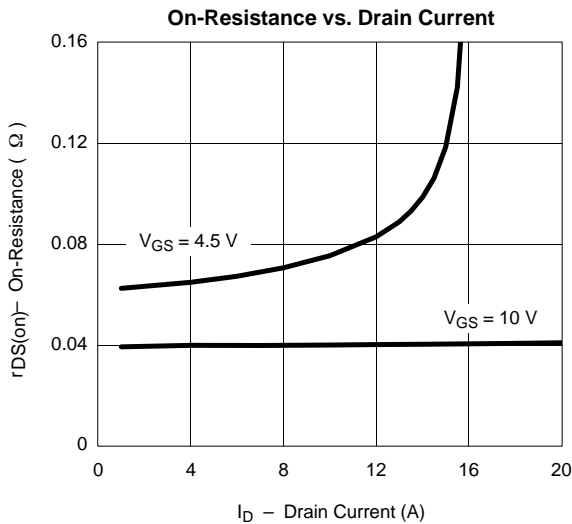
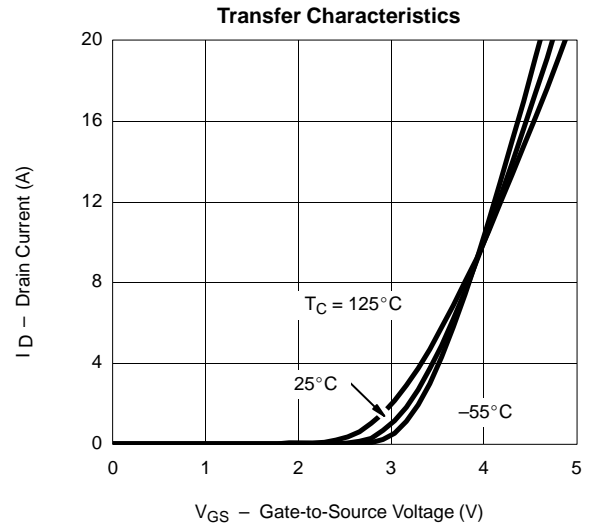
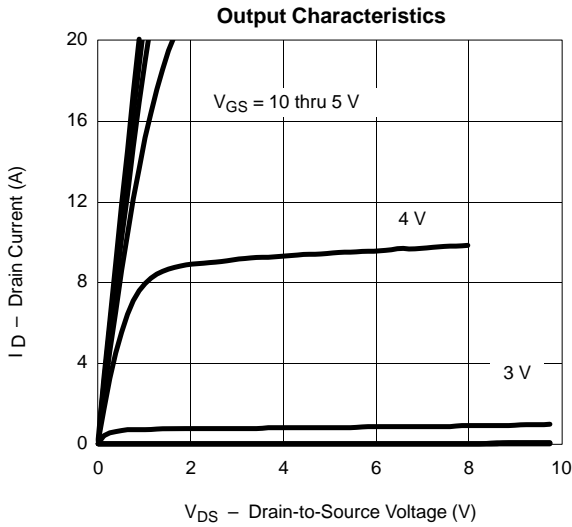
## Notes

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

SCHOTTKY SPECIFICATIONS ( $T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Forward Voltage Drop	$V_F$	$I_F = 3 \text{ A}$		0.485	0.53	V
		$I_F = 3 \text{ A}, T_J = 125^\circ\text{C}$		0.42	0.47	
Maximum Reverse Leakage Current	$I_{rm}$	$V_r = 30 \text{ V}$		0.008	0.1	mA
		$V_r = 30 \text{ V}, T_J = 75^\circ\text{C}$		0.4	5	
		$V_r = 30 \text{ V}, T_J = 125^\circ\text{C}$		6.5	20	
Junction Capacitance	$C_T$	$V_r = 15 \text{ V}$		102		pF



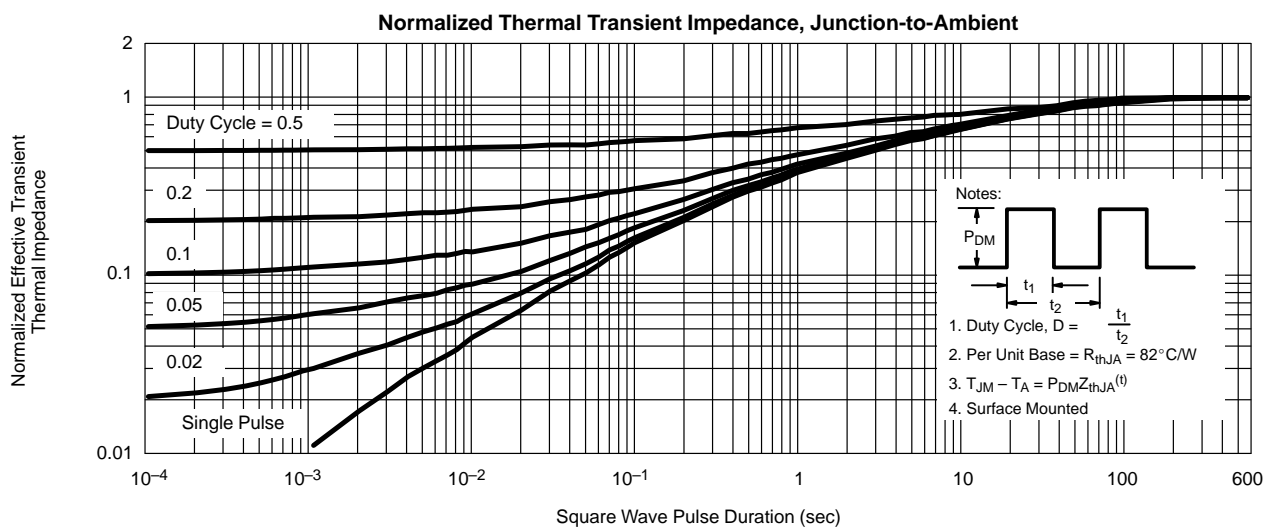
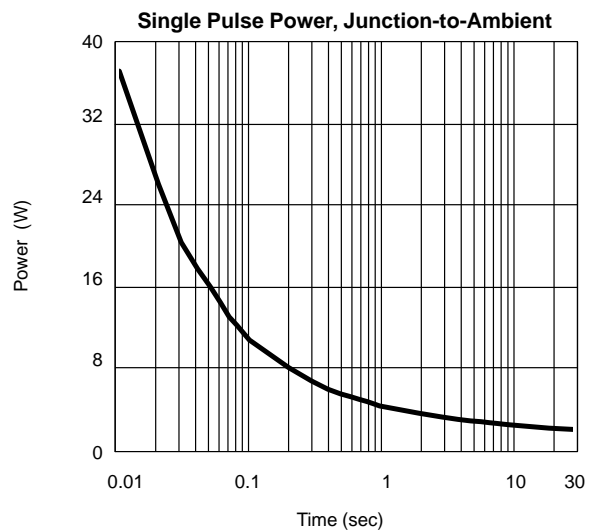
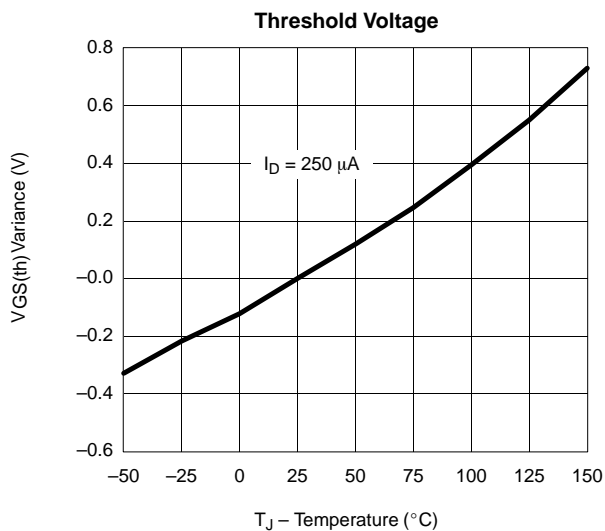
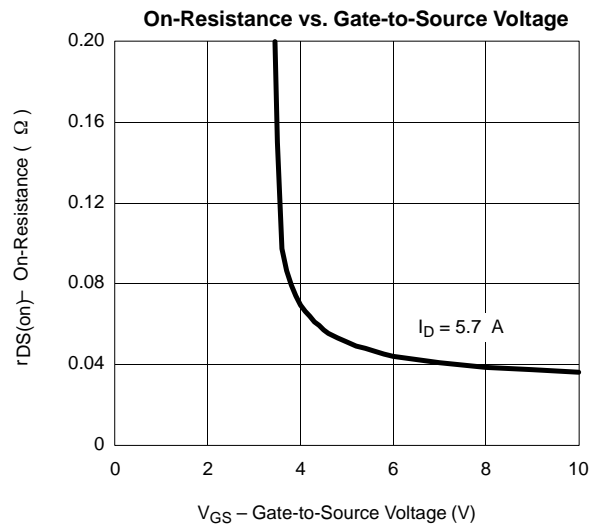
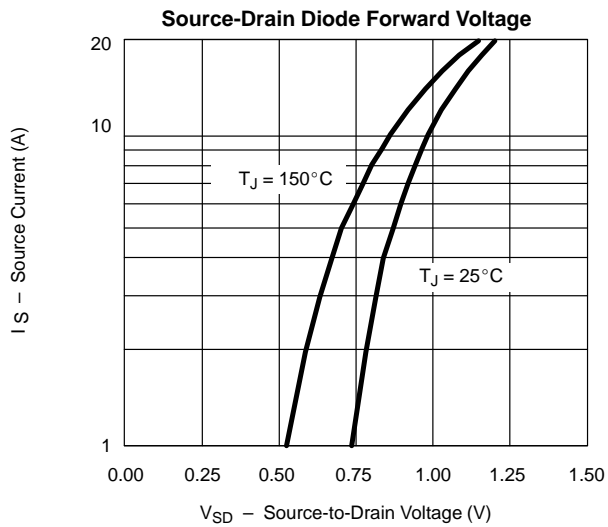
**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)** **MOSFET**





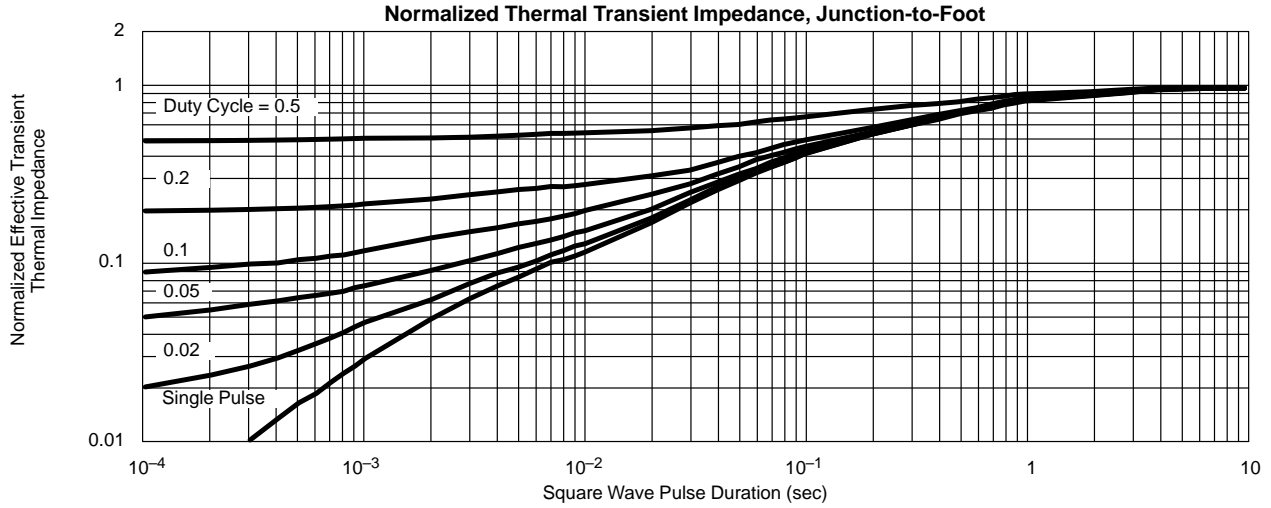
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#### MOSFET

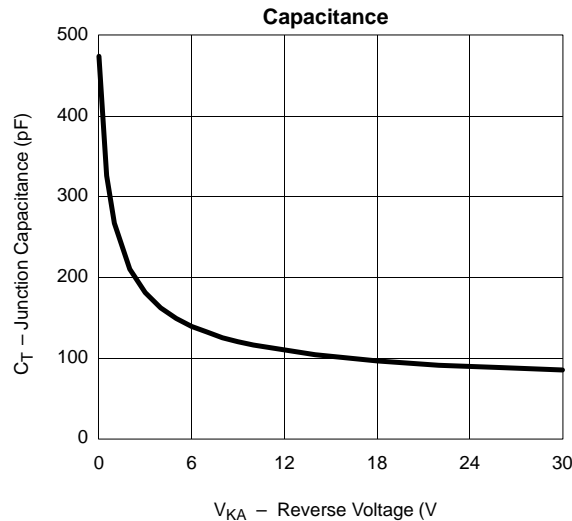
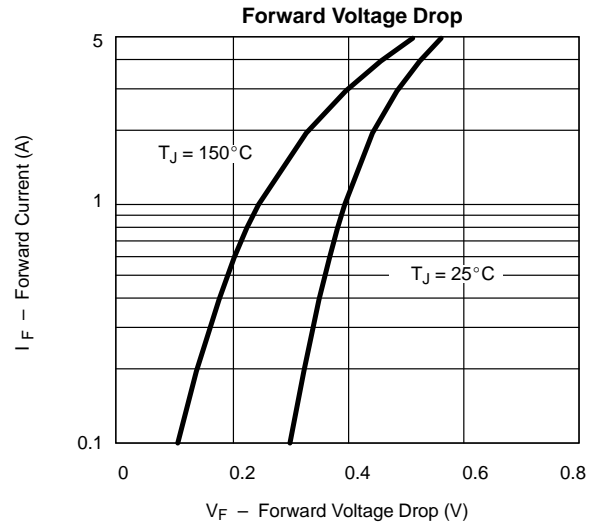
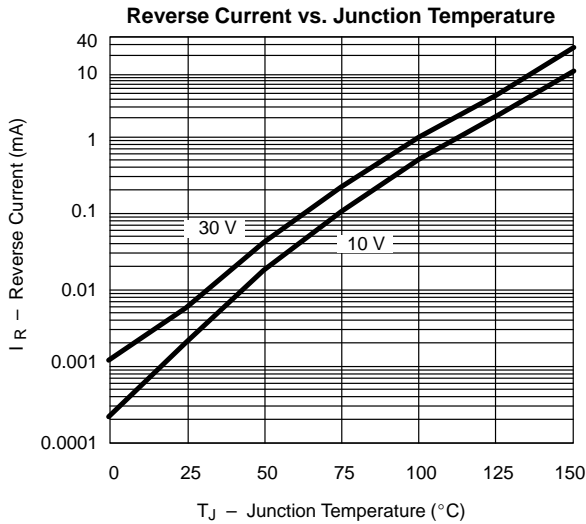




**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) MOSFET**

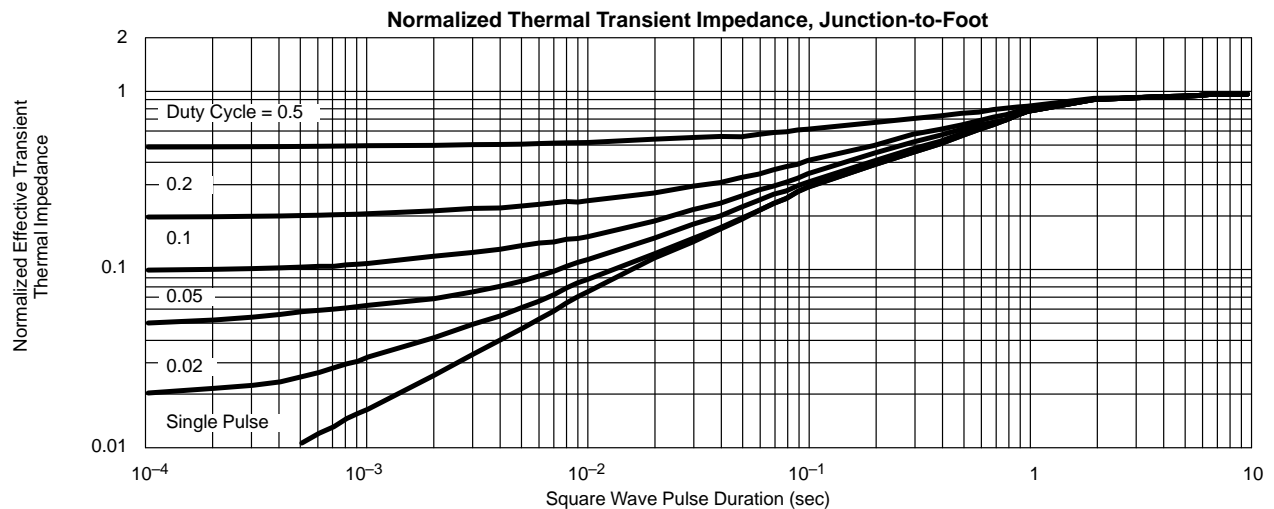
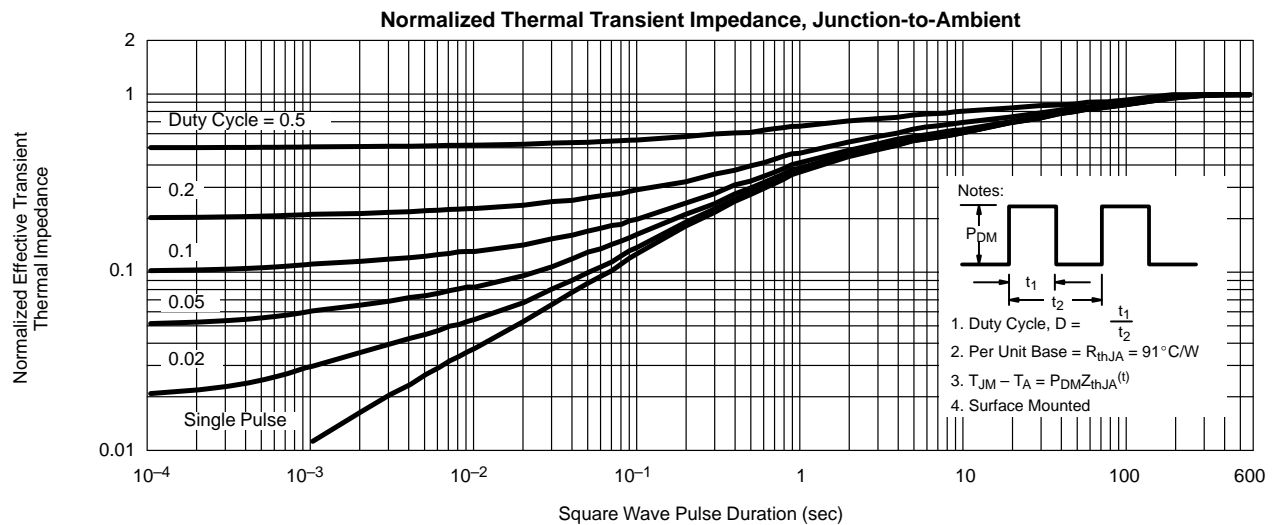


**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) SCHOTTKY**





**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) SCHOTTKY**





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