Features

- Trench Power LV MOSFET Technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed Switching
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free Available Upon Request By Adding Suffix "-HF"

Dual N&P-Channel MOSFET

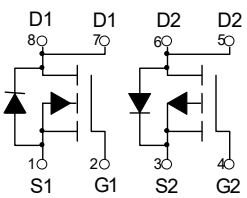
Maximum Ratings

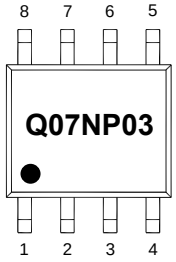
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 65.6°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Total Power Dissipation	P_D	1.9	W
N-Channel MOSFET			
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Volltage	V_{GS}	±20	V
Continuous Drain Current (Note 1)	I_D	7	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
P-Channel MOSFET			
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Volltage	V_{GS}	±20	V
Continuous Drain Current (Note 1)	I_D	-7	A
Pulsed Drain Current (Note 2)	I_{DM}	-42	A

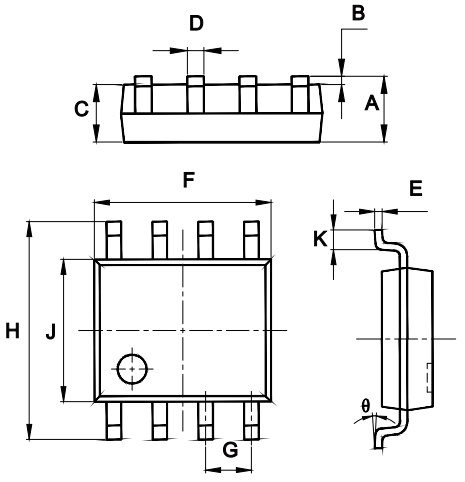
Notes: 1.Surface Mounted on FR4 Board Using the Minimum Recommended Pad Size.
2. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.

Internal Structure and Marking Code



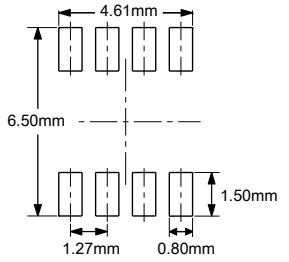


SOP-8



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.053	0.069	1.35	1.75	
B	0.004	0.010	0.10	0.25	
C	0.053	0.061	1.35	1.55	
D	0.013	0.020	0.33	0.51	
E	0.007	0.010	0.17	0.25	
F	0.185	0.200	4.70	5.10	
G	0.050		1.270		TYP.
H	0.228	0.244	5.80	6.20	
J	0.150	0.157	3.80	4.00	
K	0.016	0.050	0.40	1.27	
θ	0°	8°	0°	8°	

Suggested Solder Pad Layout



N-Channel MOSFET Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	30			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-Threshold Voltage(Note 2)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	1.5	2.2	V
Drain-Source On-Resistance(Note 2)	$R_{DS(on)}$	V_{GS}=10V, I_D=6A		14	18	mΩ
		V_{GS}=4.5V, I_D=5A		23	30	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=6A			1.2	V
Dynamic Characteristics(Note 4)						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHz		526		pF
Output Capacitance	C_{oss}			78		
Reverse Transfer Capacitance	C_{rss}			69		
Swithing Characteristics(Note 3,4)						
Total Gate Charge	Q_g	V_{DD}=15V,V_{GS}=10V,I_D=5.6A		12.22		nC
Gate-Source Charge	Q_{gs}			2.37		
Gate-Drain Charge	Q_{gd}			2.31		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} =15V, V_{GEN}=10V, I_D=5.6A, R_G=3Ω		5		ns
Turn-On Rise Time	t_r			28.2		
Turn-Off Delay Time	$t_{d(off)}$			12.8		
Turn-Off Fall Time	t_f			21.6		

P-Channel Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-30			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V			-1	μA
Gate-Threshold Voltage(Note 2)	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.5	-2.5	V
Drain-Source On-Resistance(Note 2)	$R_{DS(on)}$	V_{GS}=-10V, I_D=-6A		18	23	mΩ
		V_{GS}=-4.5V, I_D=-5A		25	34	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-6A			-1.2	V
Dynamic Characteristics(Note 3)						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHz		1497		pF
Output Capacitance	C_{oss}			176		
Reverse Transfer Capacitance	C_{rss}			145		
Swithing Characteristics(Note 3,4)						
Total Gate Charge	Q_g	V_{DD}=-15V,V_{GS}=-10V,I_D=-9A		28.5		nC
Gate-Source Charge	Q_{gs}			5.6		
Gate-Drain Charge	Q_{gd}			5.4		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} =-15V, V_{GEN}=-10V, R_L=2Ω, R_G=2.5Ω		9.7		ns
Turn-On Rise Time	t_r			43.9		
Turn-Off Delay Time	$t_{d(off)}$			54.7		
Turn-Off Fall Time	t_f			58.9		

Note 3. Switching Characteristics are Independent of Operating Junction Temperature.

4. Guaranteed by Design, Not Subject to Production Testing.

N-Channel MOSFET Curve Characteristics

Fig. 1 - Typical Output Characteristics

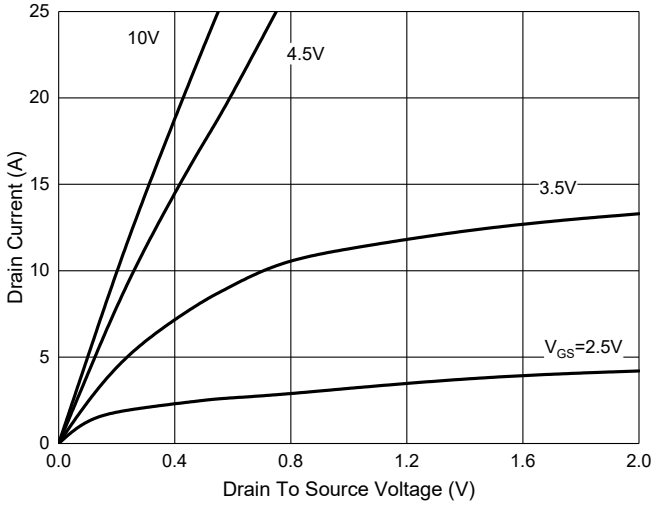


Fig. 2 - Transfer Characteristics

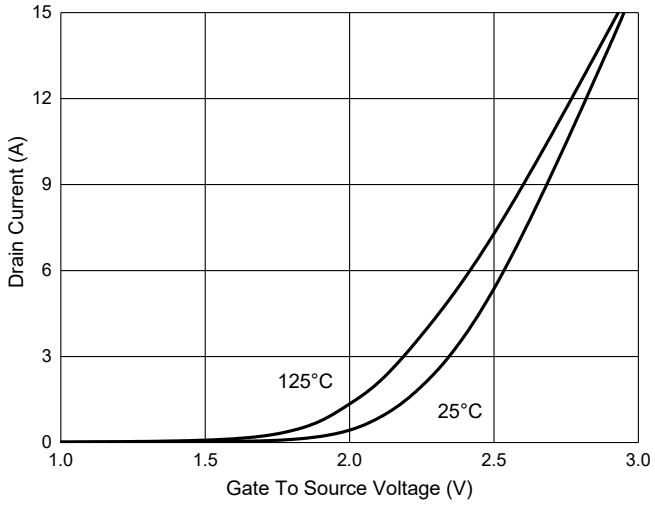


Fig. 3 - $R_{DS(ON)}$—I_D

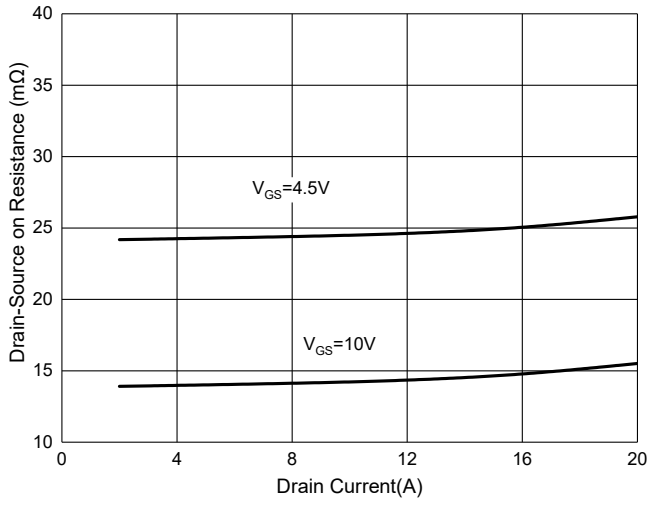


Fig. 4 - Normalized On Resistance Characteristics

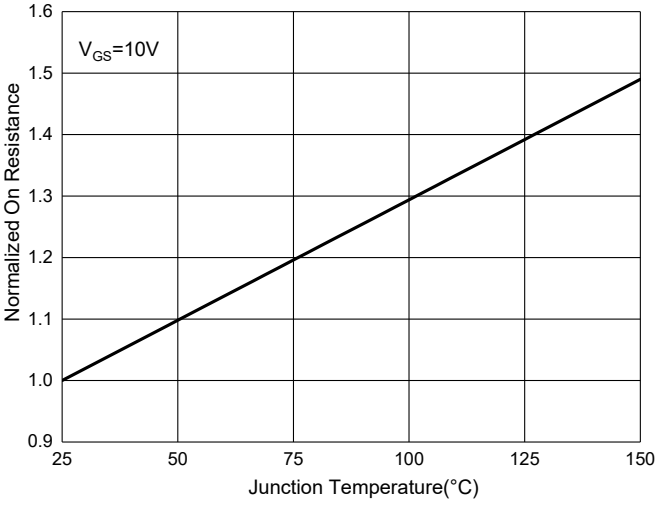


Fig. 5 - Capacitance Characteristics

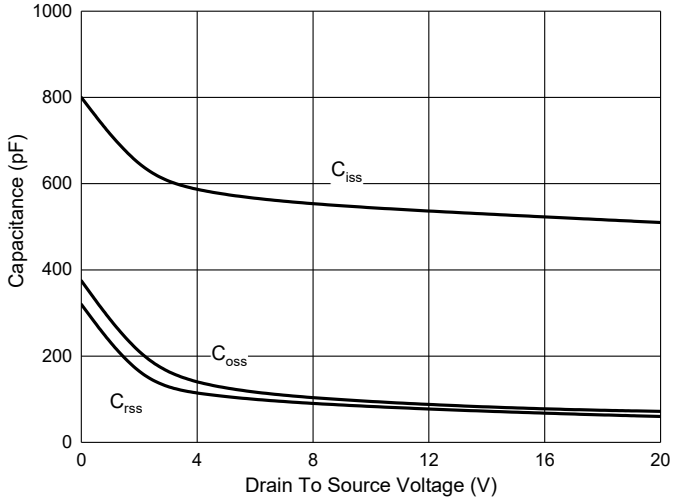


Fig. 6 - Gate Charge

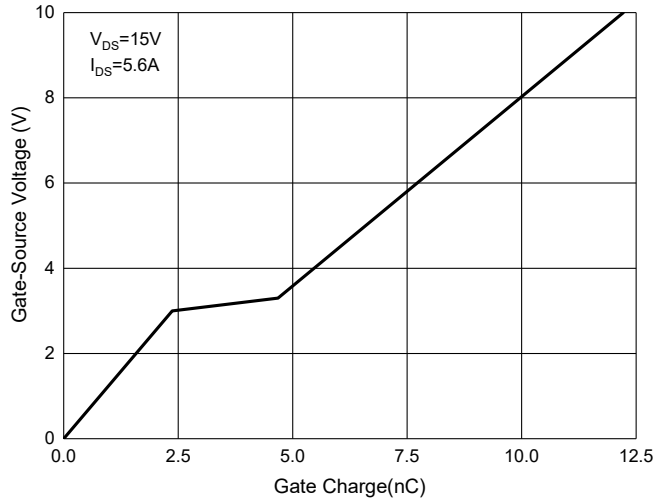
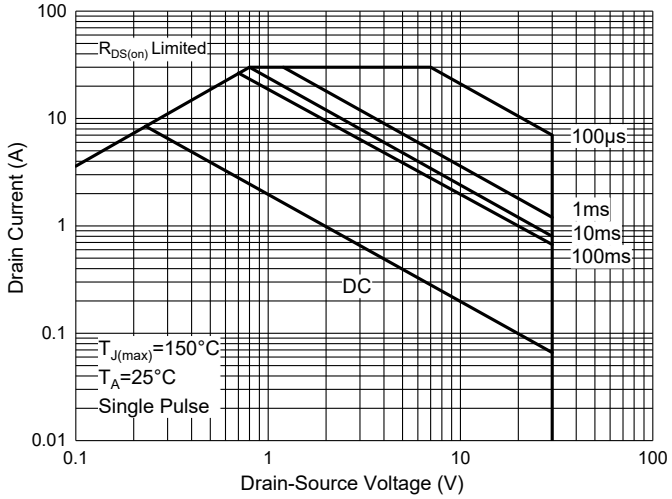


Fig. 7 - Safe Operation Area



P-Channel MOSFET Curve Characteristics

Fig. 8 - Typical Output Characteristics

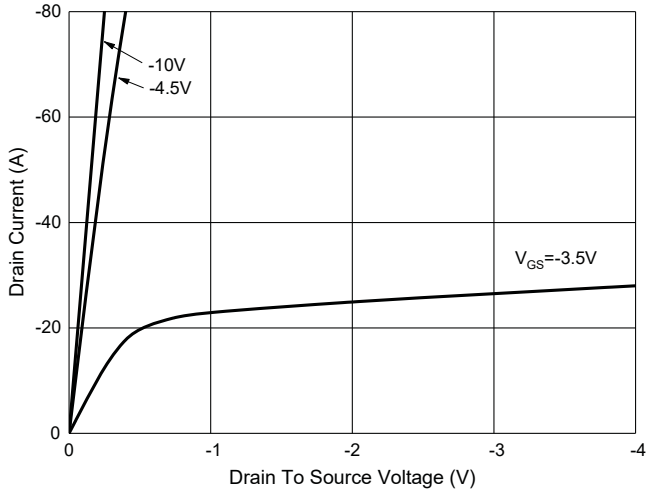


Fig. 9 - Transfer Characteristics

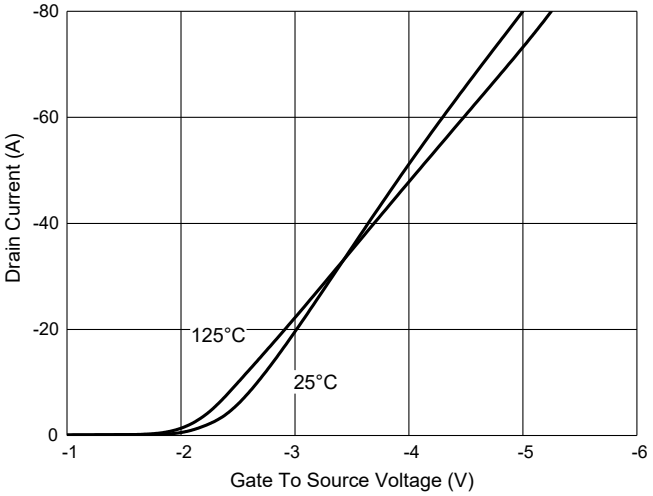


Fig. 10 - $R_{DS(ON)}$—I_D

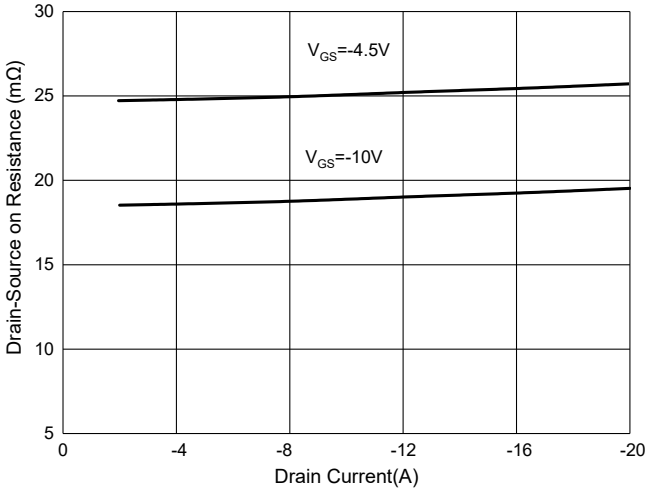


Fig. 11 - Normalized On Resistance Characteristics

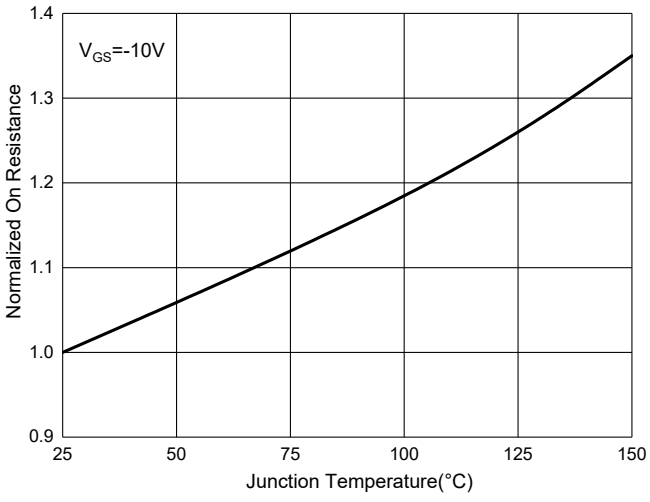


Fig. 12 - Capacitance Characteristics

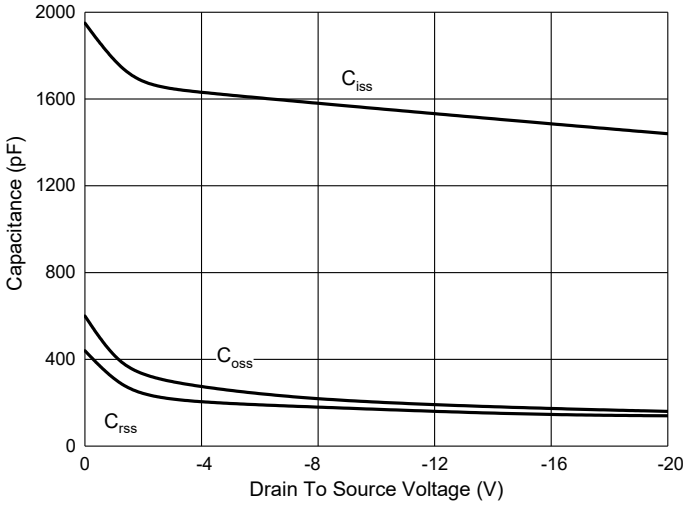


Fig. 13 - Gate Charge

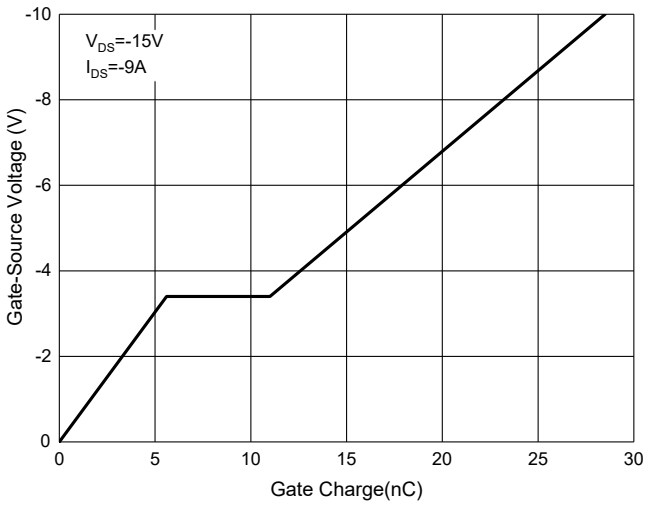


Fig. 14 - Safe Operation Area

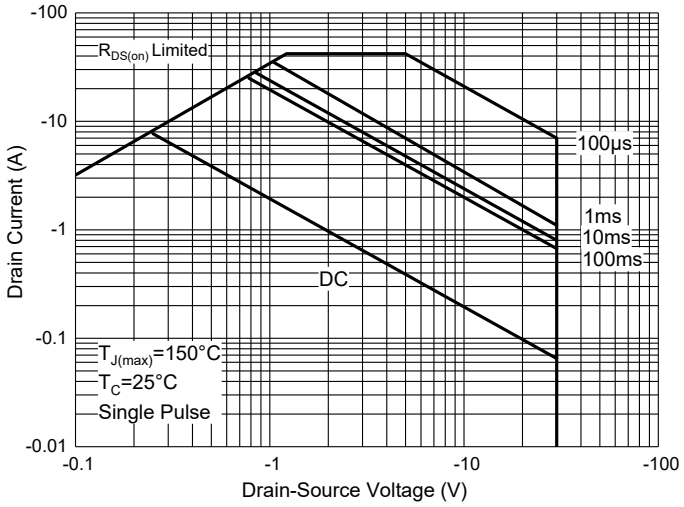
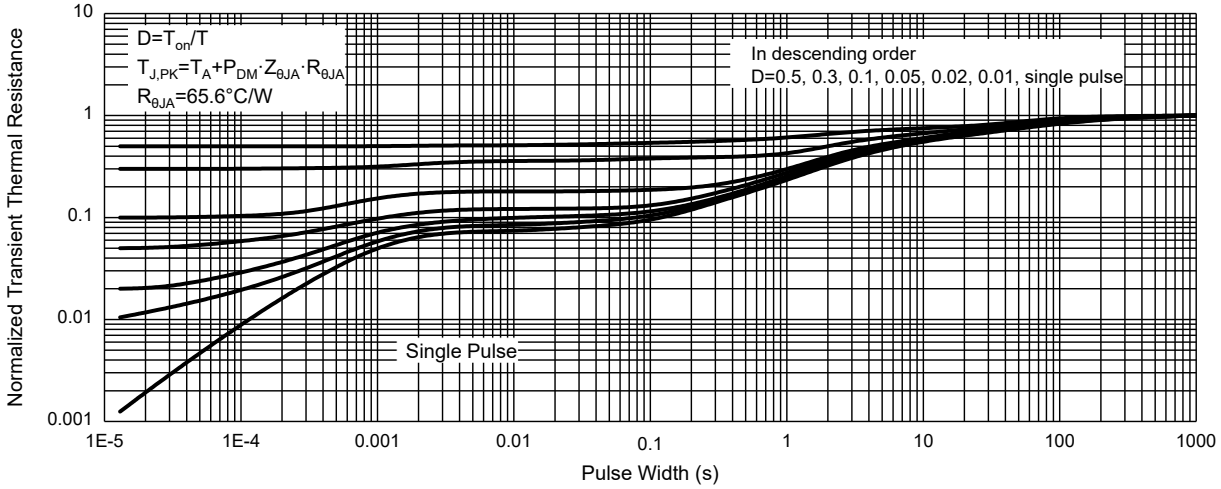


Fig. 15 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 4Kpcs/Reel

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF