

Features

- Trench MOSFET Technology
- Moisture Sensitivity Level 3
- Halogen Free. "Green" Device^(Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

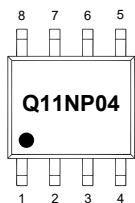
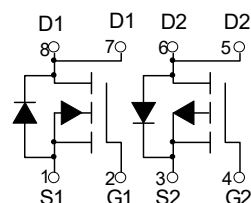
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- N-Channel Thermal Resistance: 60°C/W Junction to Ambient^(Note 2)
- P-Channel Thermal Resistance: 55°C/W Junction to Ambient^(Note 2)

Parameter	Symbol	Rating	Unit
N-Channel MOSFET			
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	11	A
		6.9	
		$T_A=25^\circ\text{C}$	
		$T_A=100^\circ\text{C}$	
Pulsed Drain Current ^(Note3)	I_{DM}	44	A
Total Power Dissipation ^(Note4)	P_D	2.1	W
Single Pulsed Avalanche Energy ^(Note5)	E_{AS}	15	mJ
P-Channel MOSFET			
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-11	A
		-6.9	
		$T_A=25^\circ\text{C}$	
		$T_A=100^\circ\text{C}$	
Pulsed Drain Current ^(Note3)	I_{DM}	-44	A
Total Power Dissipation ^(Note4)	P_D	2.3	W
Single Pulsed Avalanche Energy ^(Note5)	E_{AS}	45	mJ

Note:

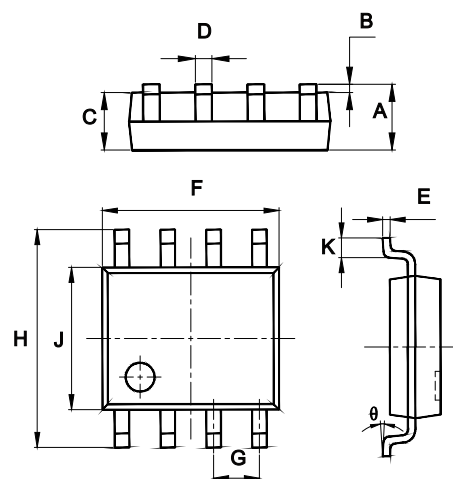
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction-ambient thermal resistance.
5. NMOS: $V_{DD}=40\text{V}$, $V_{GS}=10\text{V}$, $L=1\text{mH}$.
PMOS: $V_{DD}=-40\text{V}$, $V_{GS}=-10\text{V}$, $L=1\text{mH}$.

Internal Structure and Marking Code



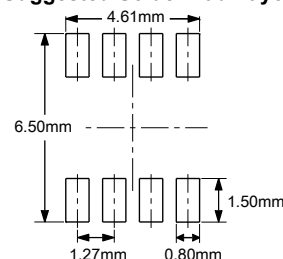
Dual N&P Channel Power MOSFET

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 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	40			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =7A		24	32	mΩ
		V _{GS} =4.5V, I _D =5A		33	50	
Gate Resistance	R _g	f=1 MHz, Open drain		2		Ω
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =3.5A		9		S
Diode Characteristics						
Continuous Body Diode Current	I _S				11	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =11A			1.2	V
Reverse Recovery Time	t _{rr}	I _F =7A, di/dt=100A/us		26		ns
Reverse Recovery Charge	Q _{rr}			19		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		390		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			40		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =7A		11		nC
Gate-Source Charge	Q _{gs}			3.1		
Gate-Drain Charge	Q _{gd}			3		
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =20V, I _D =7A, R _{GEN} =2.2Ω		6		ns
Turn-On Rise Time	t _r			20		
Turn-Off Delay Time	t _{d(off)}			12		
Turn-Off Fall Time	t _f			2		

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	-40			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-7A		25	33	mΩ
		V _{GS} =-4.5V, I _D =-5A		35	50	
Gate Resistance	R _g	f=1MHz, Open drain		15		Ω
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _D =-5A		12		S
Diode Characteristics						
Continuous Body Diode Current	I _S				-11	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-11A			-1.2	V
Reverse Recovery Time	t _{rr}	I _S =-10A, dI _F /dt=100A/μs		19		ns
Reverse Recovery Charge	Q _{rr}			9		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, f=1MHz		1080		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			110		
Total Gate Charge	Q _g	V _{DS} =-20V, V _{GS} =-10V, I _D =-10A		17		nC
Gate-Source Charge	Q _{gs}			4.5		
Gate-Drain Charge	Q _{gd}			4		
Turn-On Delay Time	t _{d(on)}	V _{DD} =-20V, V _{GEN} =-10V, R _G =3Ω, I _{DS} =-10A		7		ns
Turn-On Rise Time	t _r			24		
Turn-Off Delay Time	t _{d(off)}			20		
Turn-Off Fall Time	t _f			16		

Curve Characteristics (N-Channel)

Fig. 1 - Typical Output Characteristics

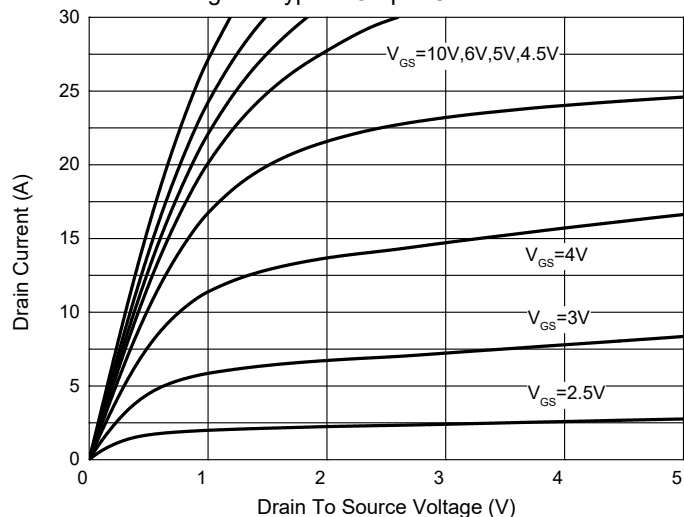


Fig. 2 - Transfer Characteristics

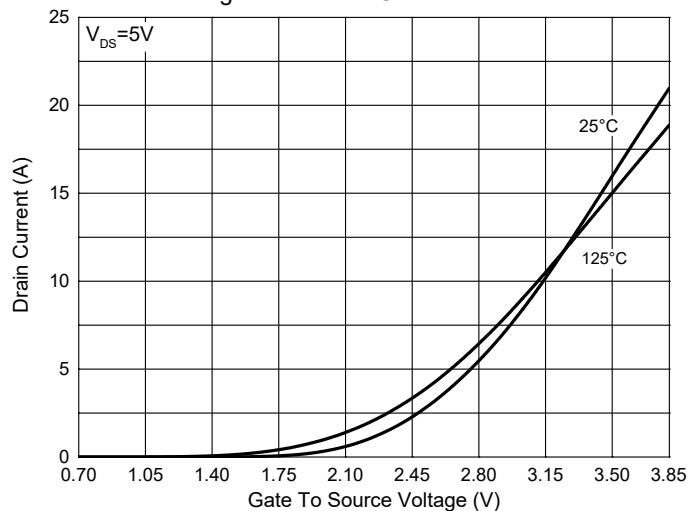


Fig. 3 - $R_{DS(ON)} - V_{GS}$

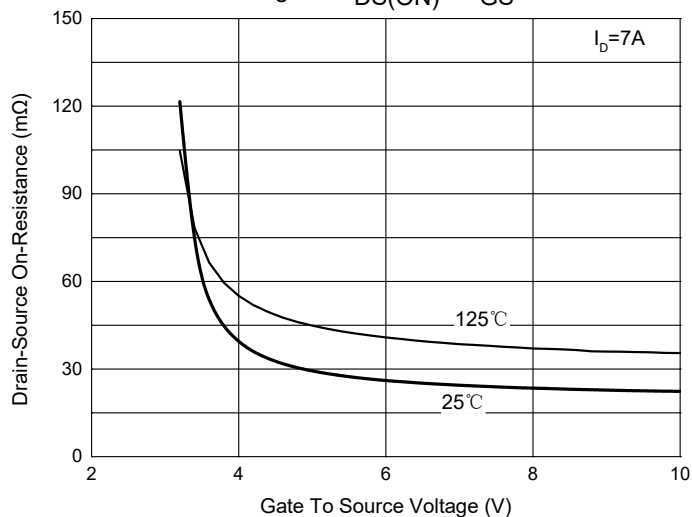


Fig. 4 - $R_{DS(ON)} - I_D$

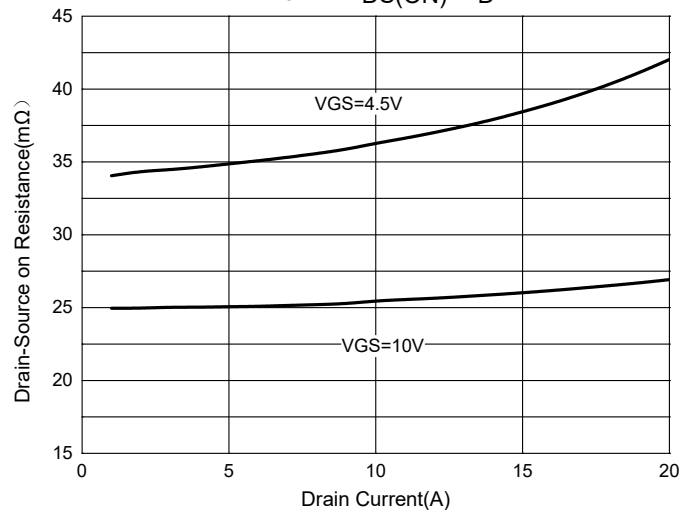


Fig. 5 - Capacitance Characteristics

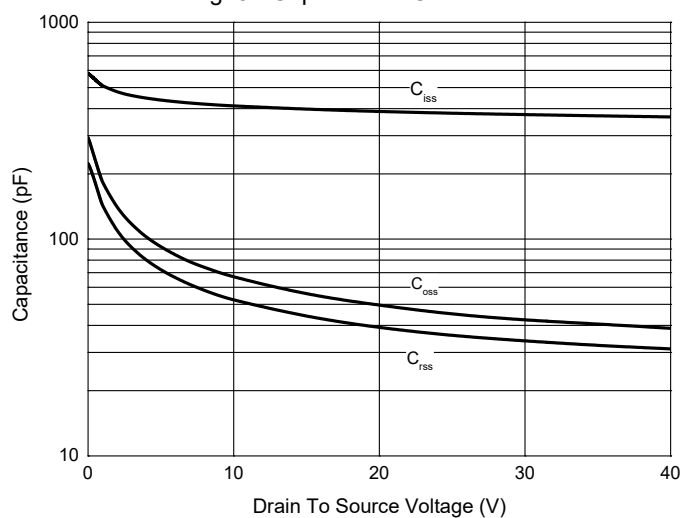
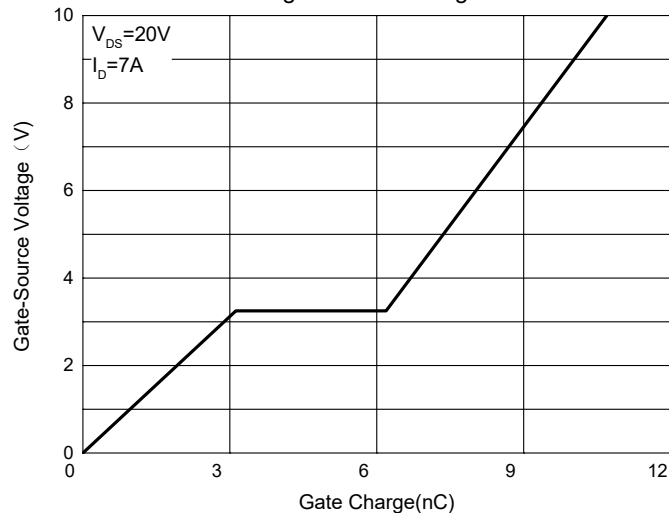


Fig. 6 - Gate Charge



Curve Characteristics (N-Channel)

Fig. 7 - Normalized Threshold Voltage

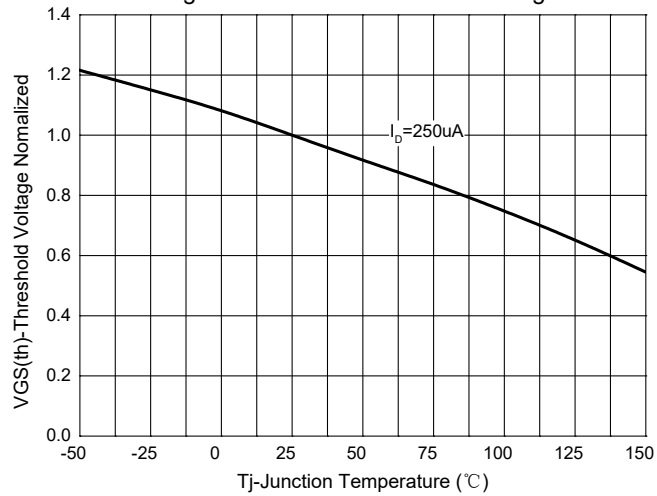


Fig.8-Normalized On Resistance Characteristics

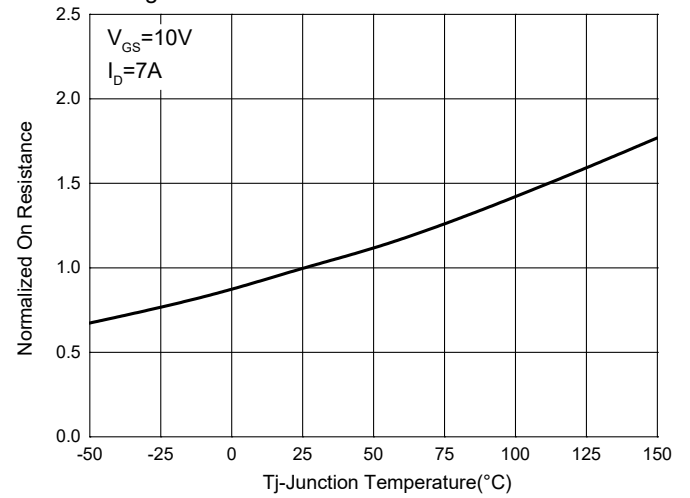


Fig.9 - $I_S - V_{SD}$

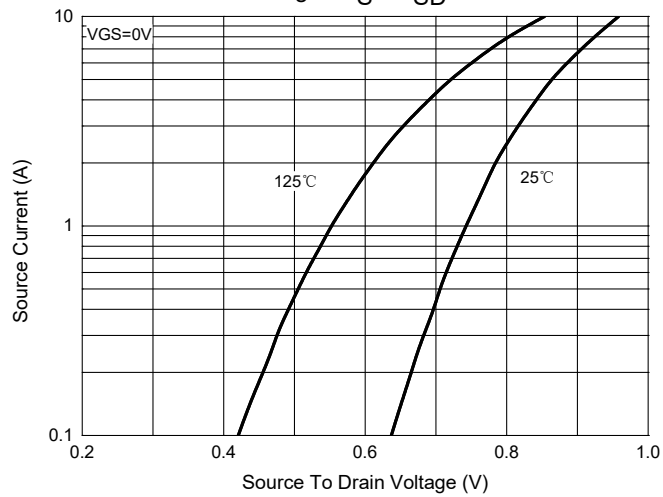


Fig. 10 - Drain Current

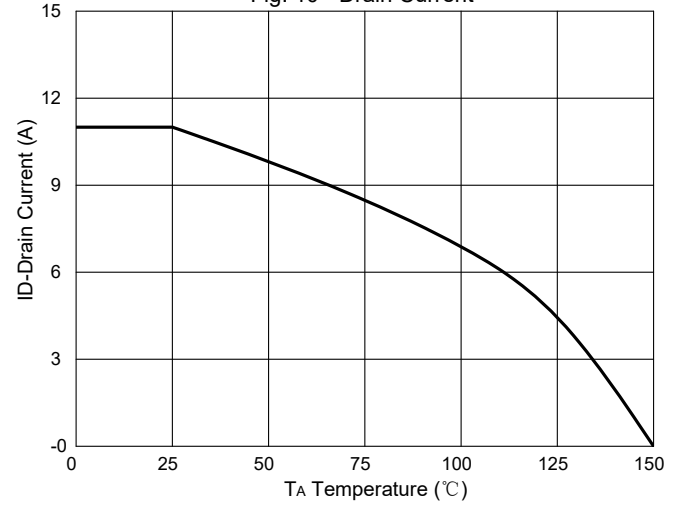
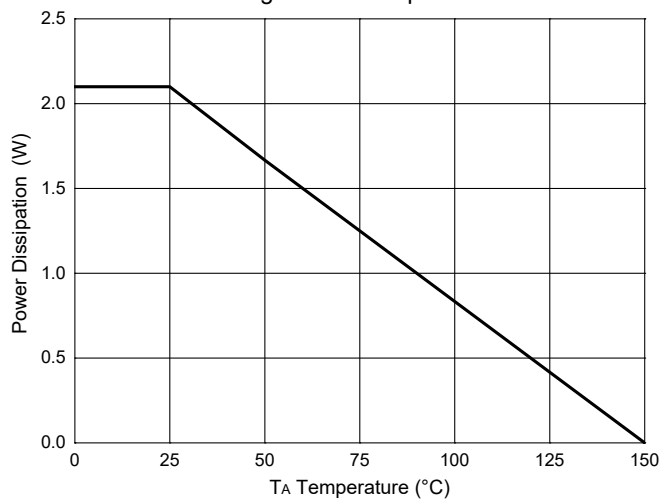


Fig.11-PD Dissipation



Curve Characteristics (N-Channel)

Fig. 12 - Safe Operation Area

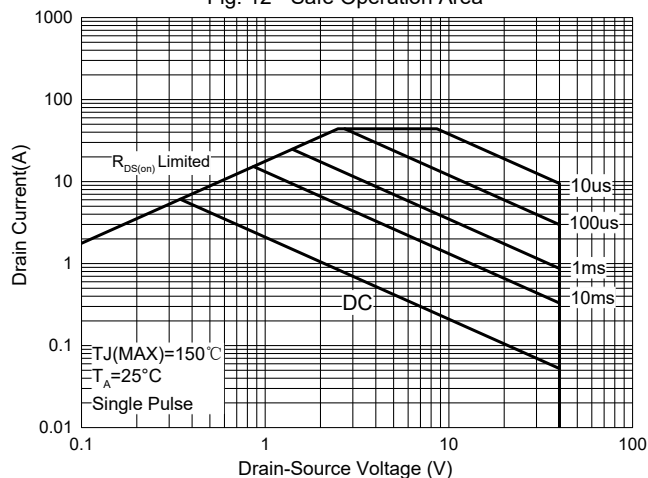
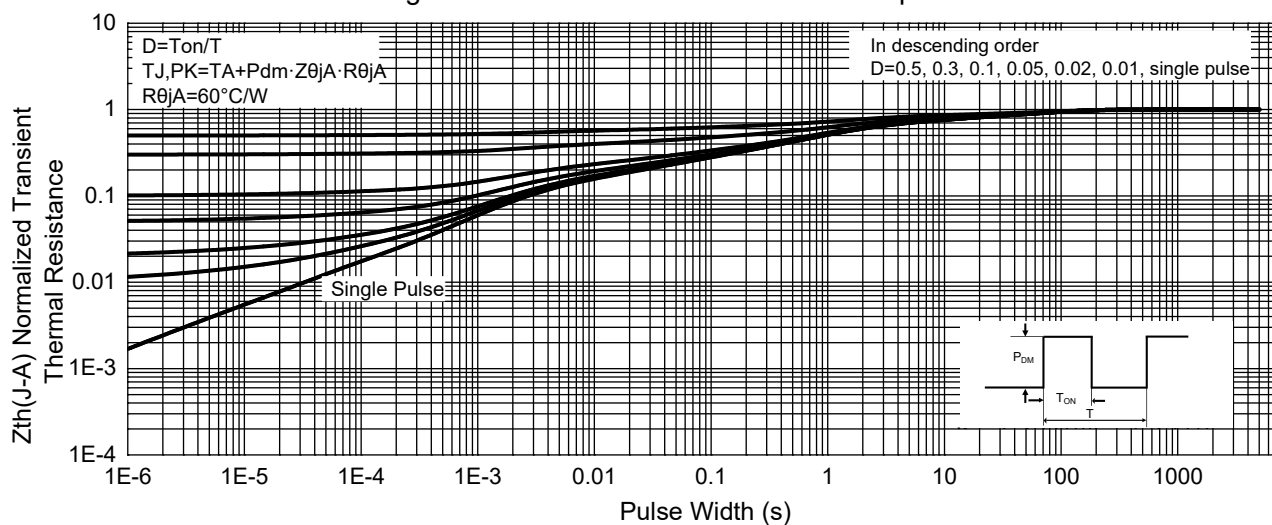


Fig. 13 - Normalized Transient Thermal Impedance



Curve Characteristics (P-Channel)

Fig. 1 - Typical Output Characteristics

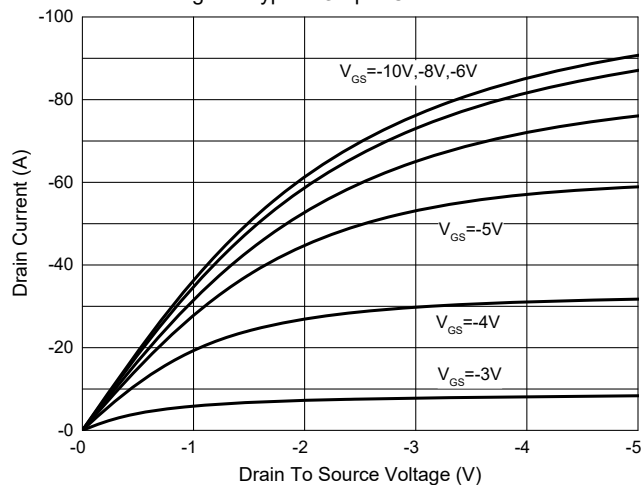


Fig. 2 - Transfer Characteristics

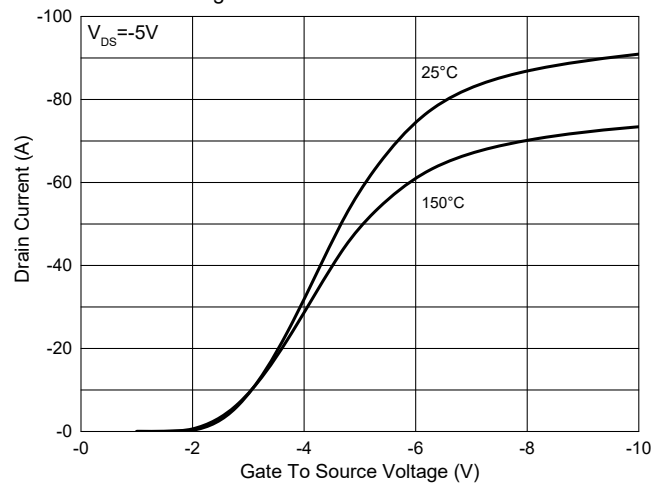


Fig. 3 - $R_{DS(ON)} - V_{GS}$

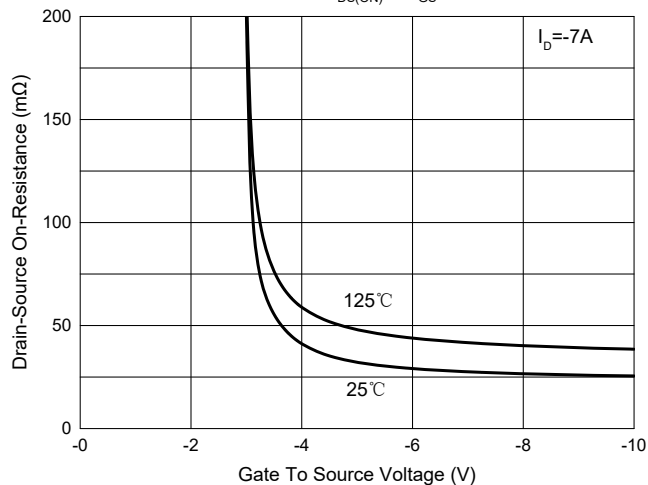


Fig. 4 - $R_{DS(ON)} - I_D$

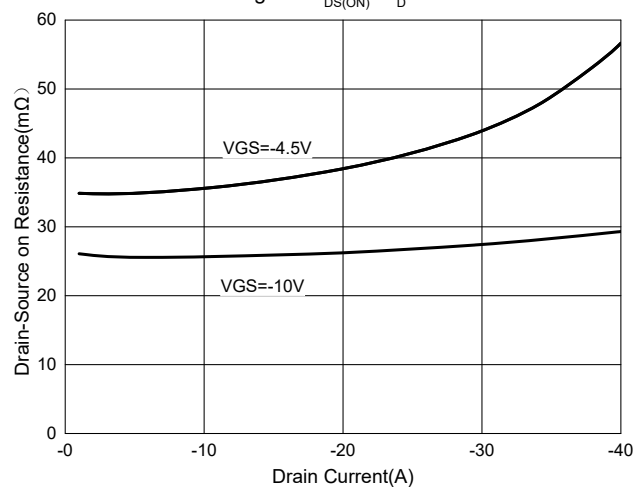


Fig. 5 - Capacitance Characteristics

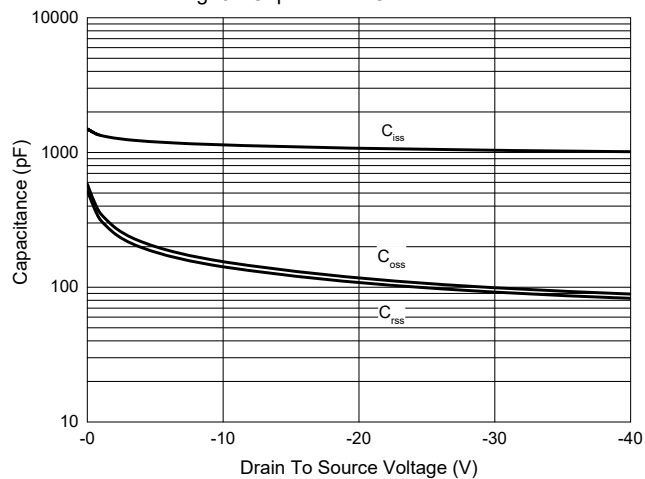
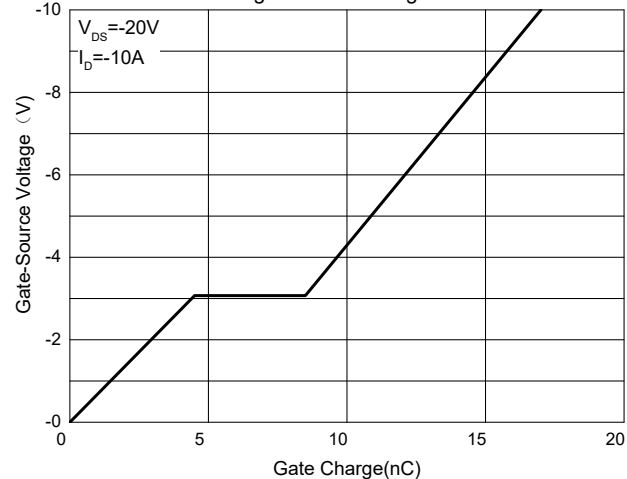


Fig. 6 - Gate Charge



Curve Characteristics (P-Channel)

Fig. 7 - Normalized Threshold Voltage

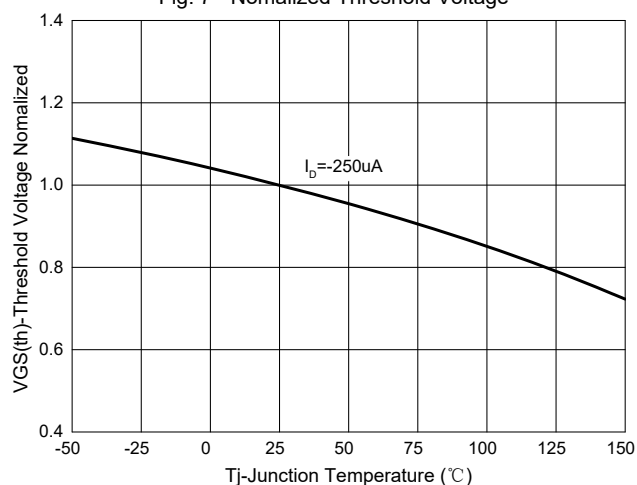


Fig.8-Normalized On Resistance Characteristics

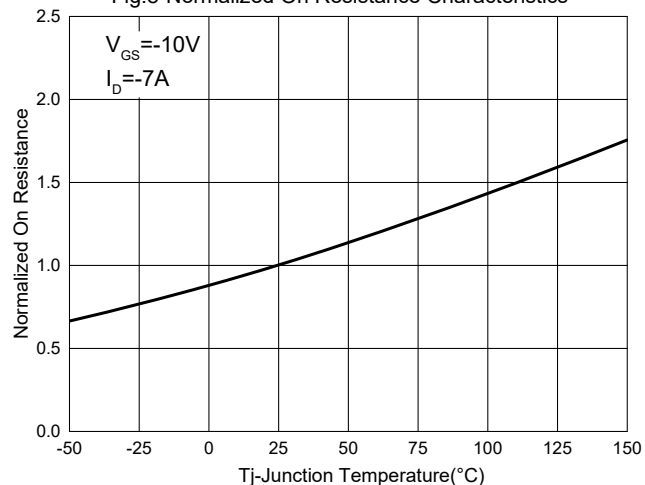


Fig.9 - $I_S - V_{SD}$

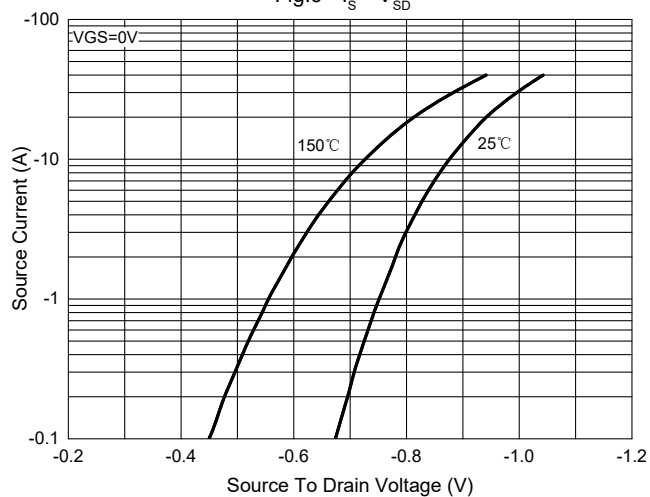


Fig. 10 - Drain Current

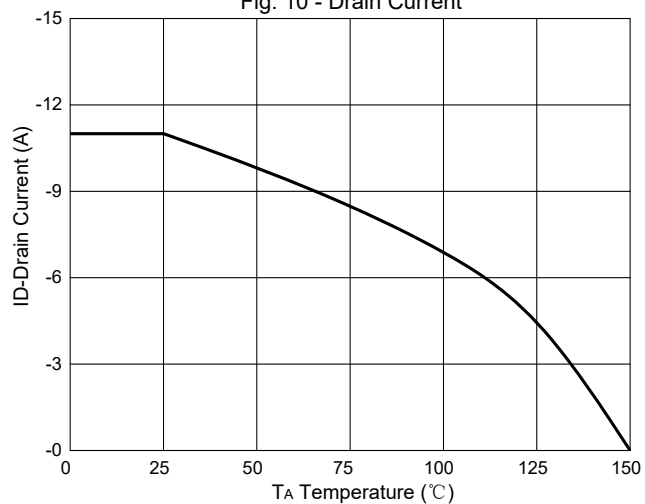
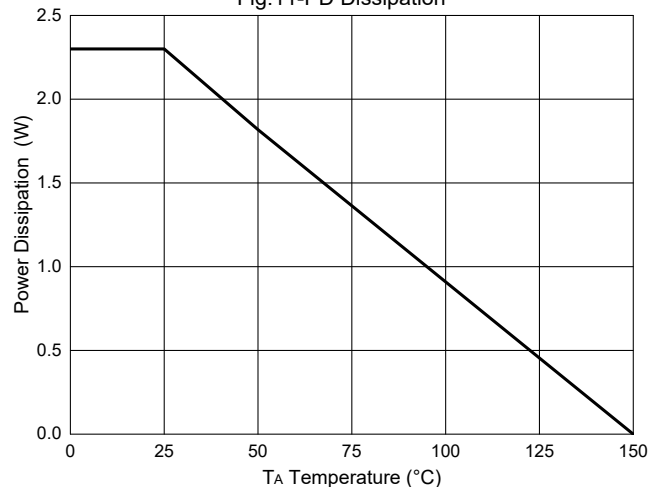


Fig.11-PD Dissipation



Curve Characteristics (P-Channel)

Fig. 12 - Safe Operation Area

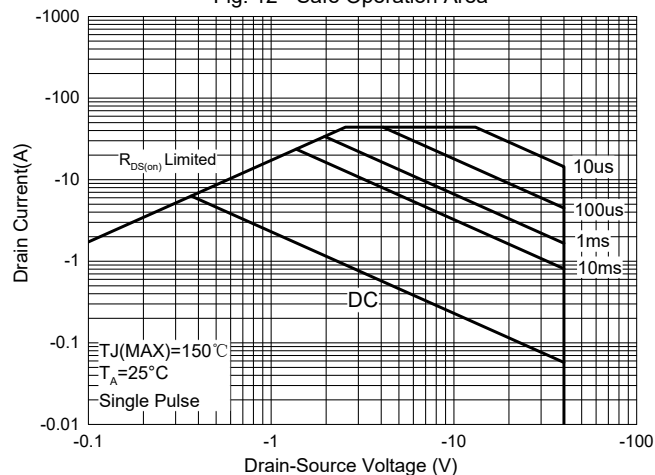
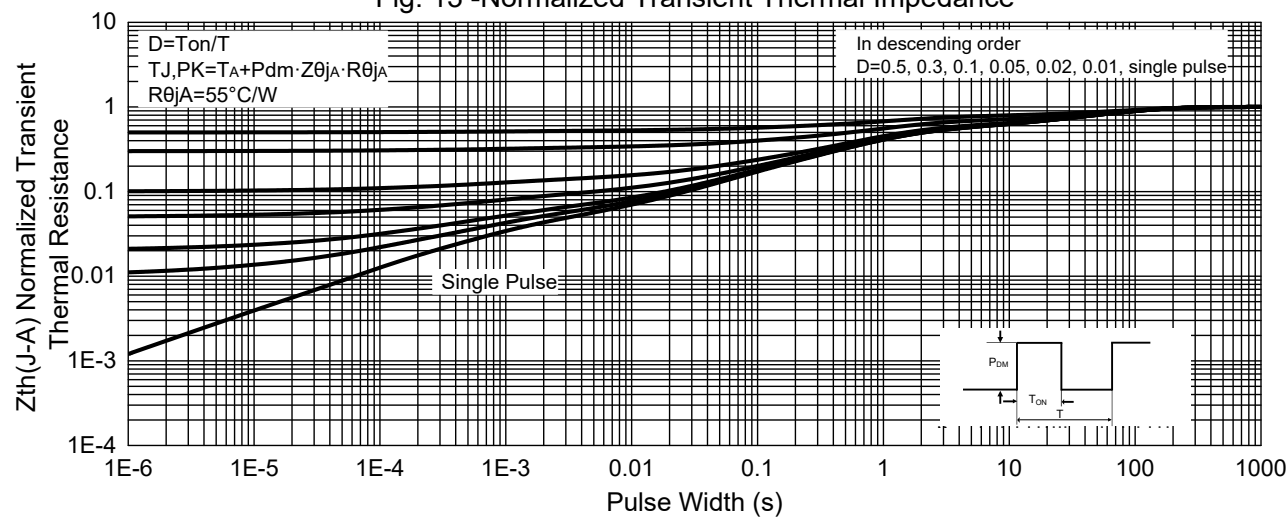


Fig. 13 - Normalized Transient Thermal Impedance



Ordering Information

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

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