

Features

- ESD Protected Up To 2KV (HBM)
- Trench LV MOSFET Technology
- Moisture Sensitivity Level 1
- 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

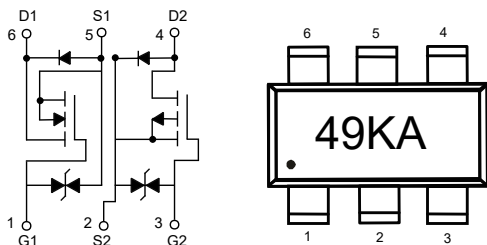
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 100°C/W Junction to Ambient (Note 2)

Parameter	Symbol	Rating	Unit
Total Power Dissipation (Note 4)	P_D	1.25	W
N-Channel MOSFET			
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	1.2
		$T_A=100^\circ\text{C}$	0.75
Pulsed Drain Current (Note 3)	I_{DM}	4.8	A
P-Channel MOSFET			
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-1
		$T_A=100^\circ\text{C}$	-0.63
Pulsed Drain Current (Note 3)	I_{DM}	-4	A

Note:

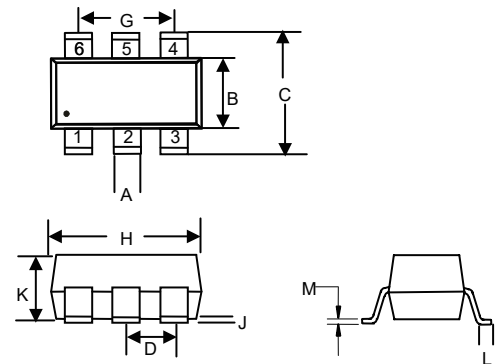
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.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

Internal Structure and Marking Code



Dual N&P-Channel MOSFET

SOT23-6L



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

N-Channel ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35	0.72	1.1	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.65A$		188	300	m Ω
		$V_{GS}=2.5V, I_D=0.55A$		270	400	
		$V_{GS}=1.8V, I_D=0.2A$		455	700	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=0.65A$		1.7		S
Gate Resistance	R_g	f=1 MHz, Open drain		16		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				1.2	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=0.65A$			1.2	V
Reverse Recovery Time	t_{rr}	$I_F=0.6A, dI_F/dt=100A/\mu s$		8		ns
Reverse Recovery Charge	Q_{rr}			1.2		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=16V, V_{GS}=0V, f=1MHz$		27		pF
Output Capacitance	C_{oss}			10		
Reverse Transfer Capacitance	C_{rss}			4.8		
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=1A$		0.6		nC
Gate-Source Charge	Q_{gs}			0.13		
Gate-Drain Charge	Q_{gd}			0.15		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, R_G=10\Omega, I_D=0.5A$		3		ns
Turn-On Rise Time	t_r			3		
Turn-Off Delay Time	$t_{d(off)}$			7		
Turn-Off Fall Time	t_f			4		

P-Channel ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.35	-0.65	-1.1	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1	μA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1A$		0.62	0.85	Ω
		$V_{GS}=-2.5V, I_D=-0.8A$		0.98	1.2	
		$V_{GS}=-1.8V, I_D=-0.2A$		1.4	2	
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-0.65A$		1		S
Gate Resistance	R_g	f=1 MHz, Open drain		38		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-1	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-0.5A, dI_F/dt=100A/\mu s$		12		ns
Reverse Recovery Charge	Q_{rr}			3.6		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-16V, V_{GS}=0V, f=1MHz$		36		pF
Output Capacitance	C_{oss}			11		
Reverse Transfer Capacitance	C_{rss}			5.6		
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-1A$		1.3		nC
Gate-Source Charge	Q_{gs}			0.4		
Gate-Drain Charge	Q_{gd}			0.23		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-10V, V_{GS}=-4.5V, R_G=10\Omega, I_D=-0.5A$		6		ns
Turn-On Rise Time	t_r			6		
Turn-Off Delay Time	$t_{d(off)}$			11		
Turn-Off Fall Time	t_f			6		

Curve Characteristics (N-Channel)

Fig.1 - Typical Output Characteristics

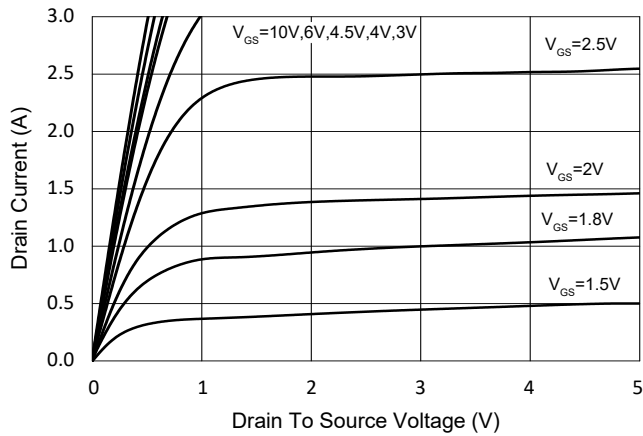


Fig.2 - Transfer Characteristic

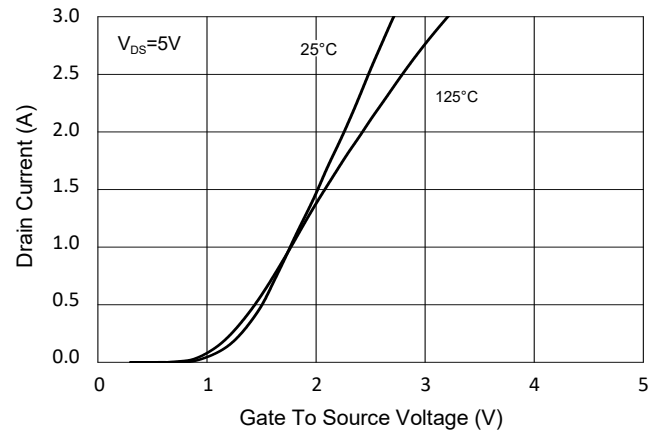


Fig.3 - $R_{DS(ON)}$ - V_{GS}

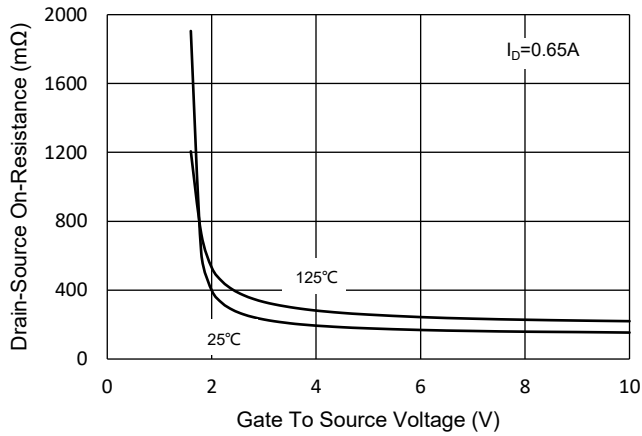


Fig.4 - $R_{DS(ON)}$ - I_D

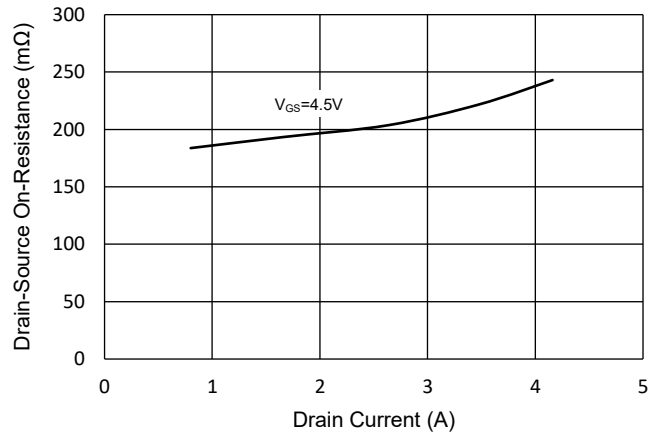


Fig.5 - Capacitance Characteristics

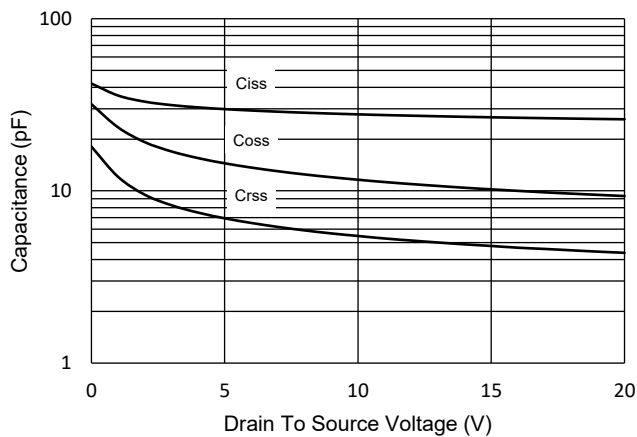
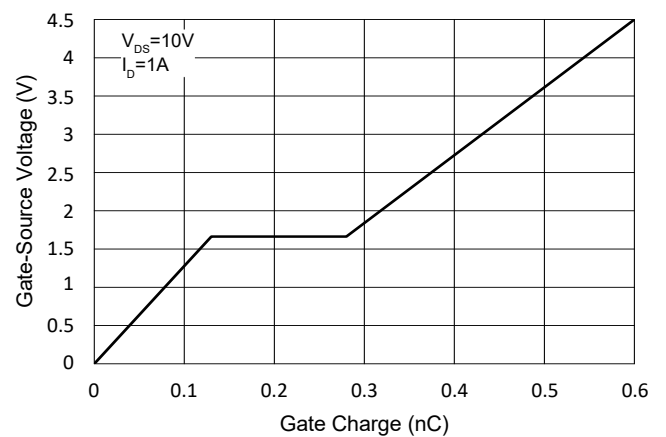


Fig.6 - Gate Charge



Curve Characteristics (N-Channel)

Fig.7 - Normalized Threshold Voltage

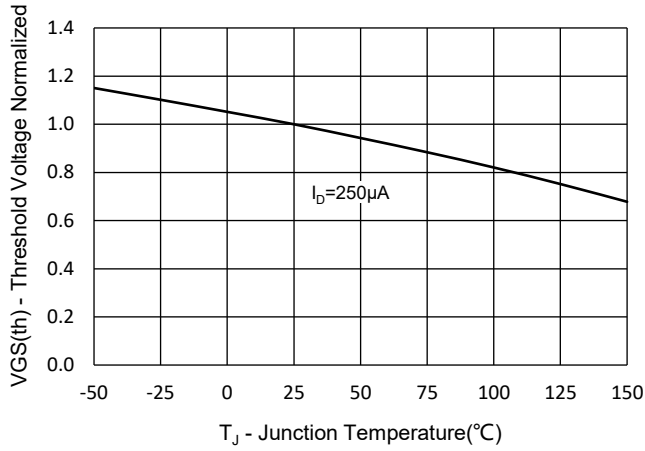


Fig.8 - Normalized On Resistance Characteristics

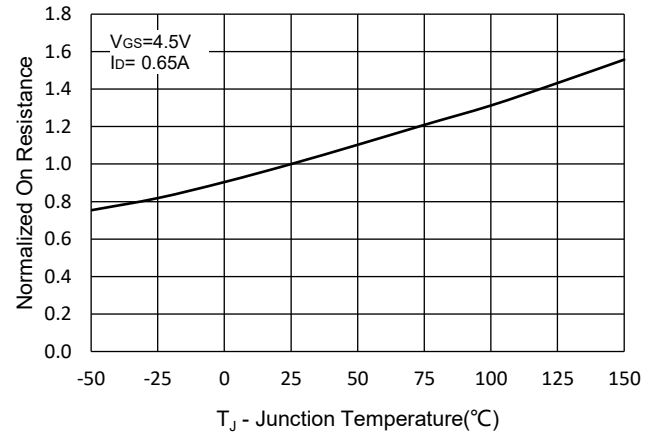


Fig.9 - $I_S - V_{SD}$

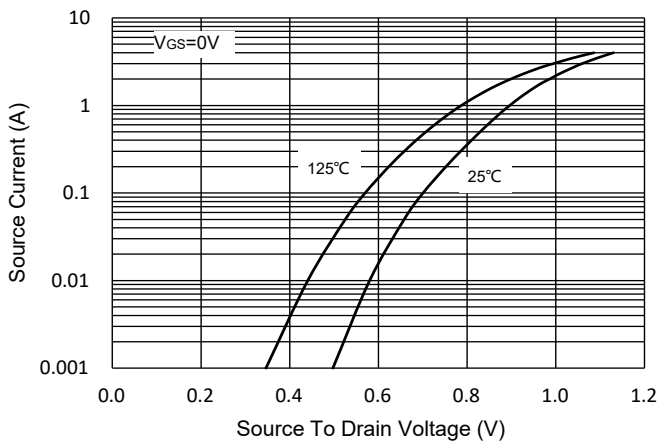


Fig.10 - Drain Current

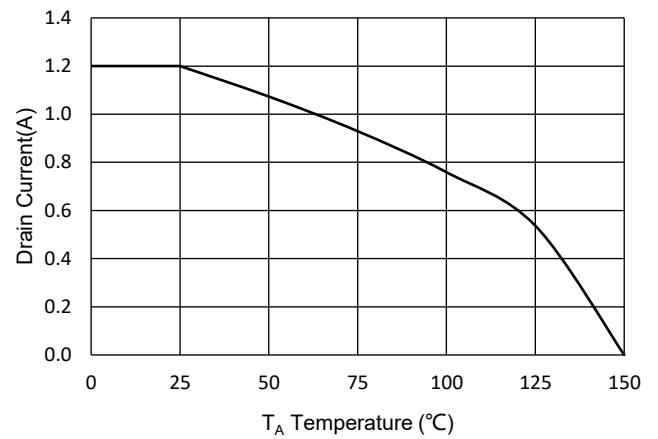
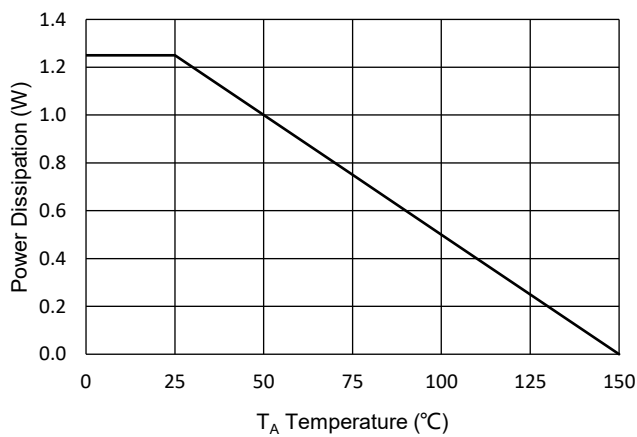


Fig.11 - PD Dissipation



Curve Characteristics (N-Channel)

Fig.12 - Safe Operation Area

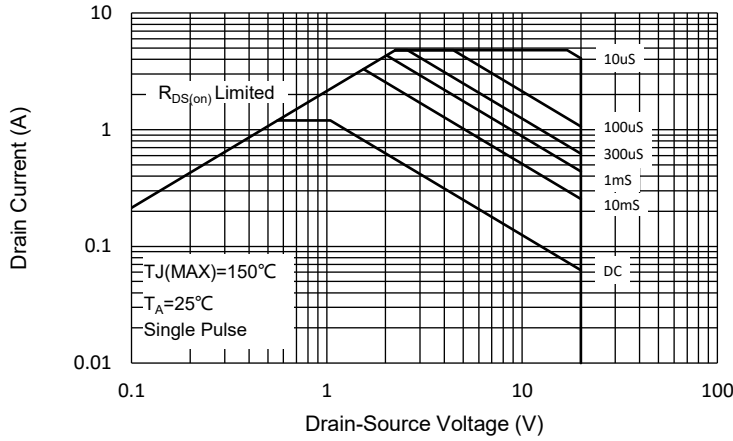
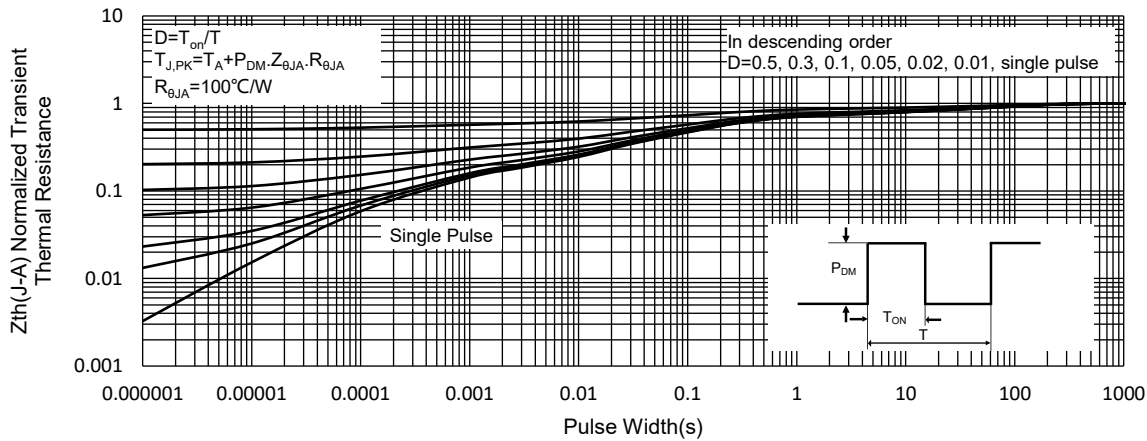


Fig.13 - Normalized Transient Thermal Impedance



Curve Characteristics (P-Channel)

Fig.1 - Typical Output Characteristics

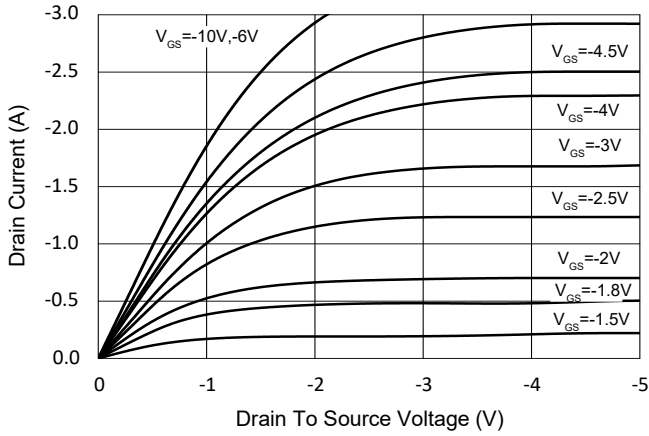


Fig.2 - Transfer Characteristic

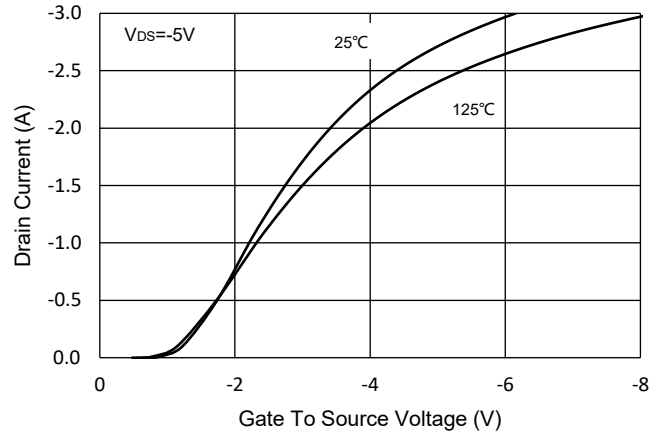


Fig.3 - $R_{DS(ON)}$ - V_{GS}

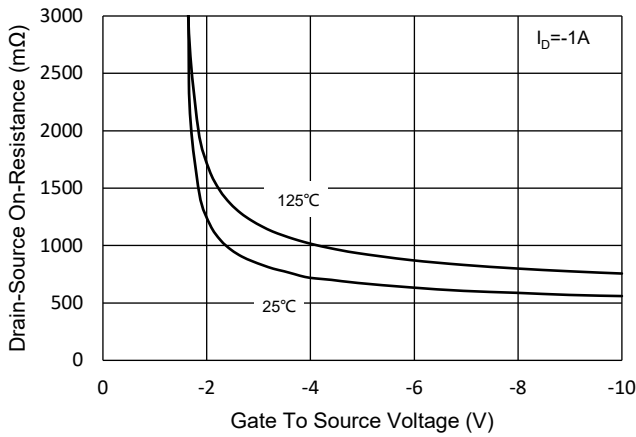


Fig.4 - $R_{DS(ON)}$ - I_D

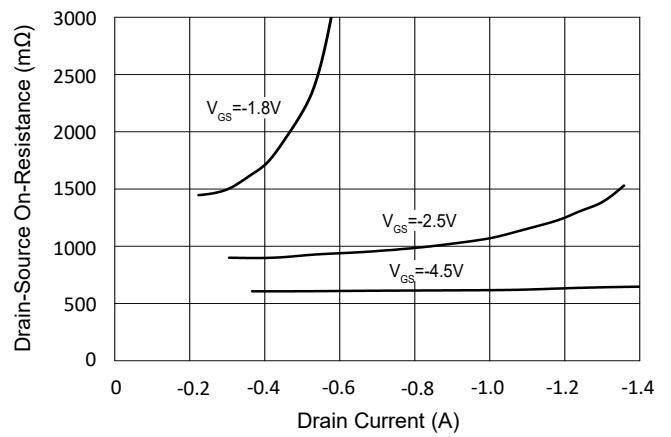


Fig.5 - Capacitance Characteristics

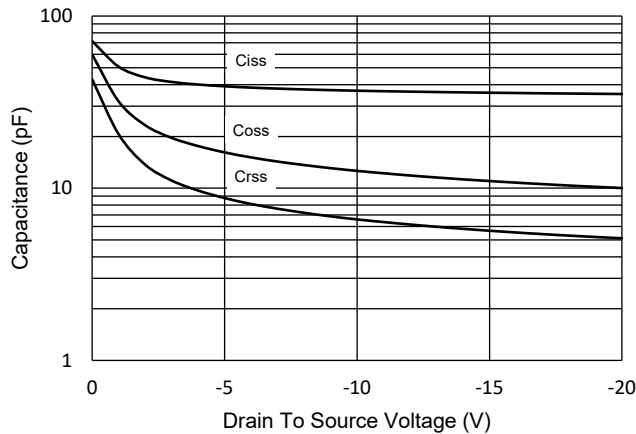
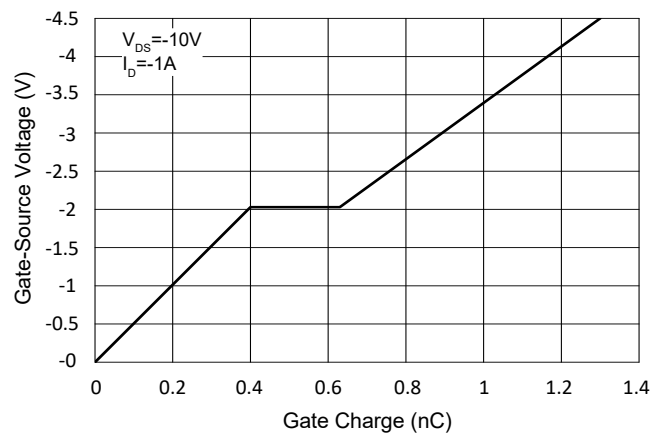


Fig.6 - Gate Charge



Curve Characteristics (P-Channel)

Fig.7 - Normalized Threshold Voltage

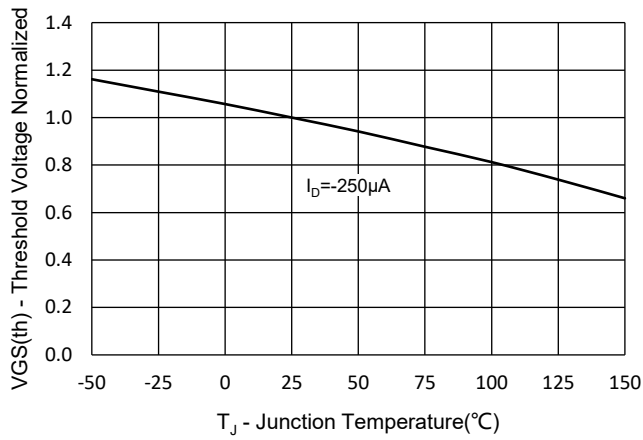


Fig.8 - Normalized On Resistance Characteristics

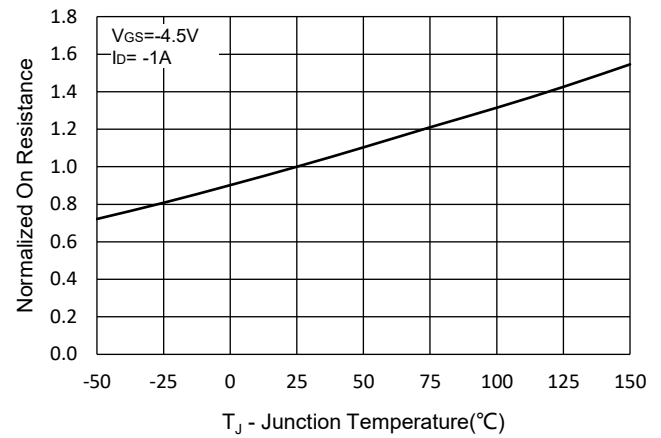


Fig.9 - I_S - V_{SD}

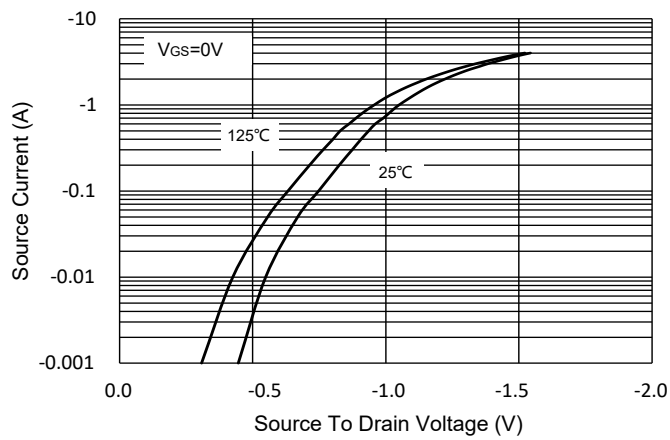


Fig.10 - Drain Current

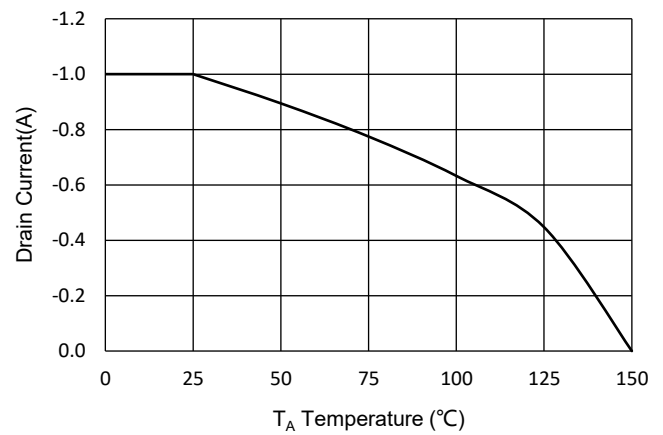
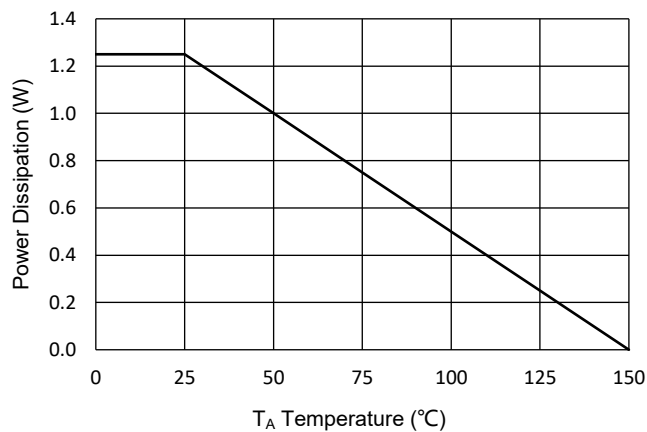


Fig.11 Power Dissipation



Curve Characteristics (P-Channel)

Fig.12 - Safe Operation Area

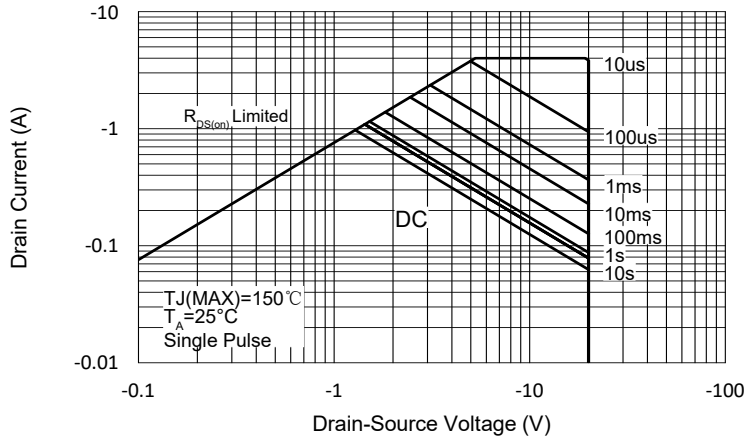
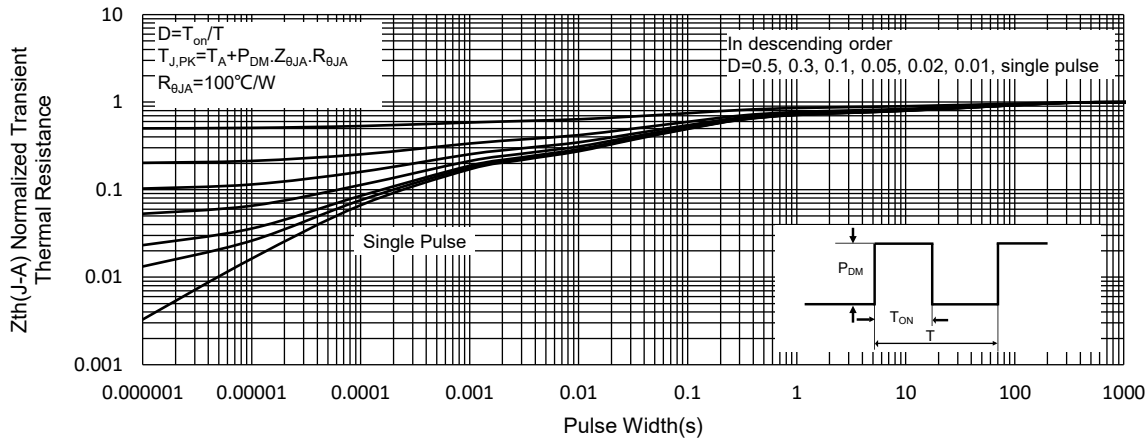


Fig.13 - Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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