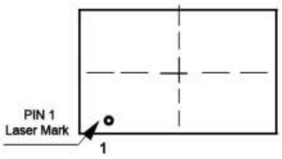
AC0203TA0

20V N and P-Channel MOSFET

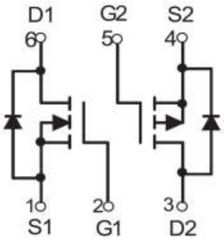
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	100mΩ@4.5V	1.5A
	120mΩ@2.5V	
-20V	270mΩ@-4.5V	-1.3A
	370mΩ@-2.5V	

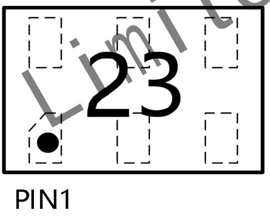
DFN1.45*1.0-6L



Schematic diagram



Marking



Features

- Low threshold voltage
- Trench MOSFET technology

Applications

- Battery switch
- High-speed line driver
- Low-side load switch
- Switching circuits

Absolute Maximum rating（T_A = 25℃ unless otherwise noted）

Parameter		Symbol	Value		Units
			N-Channel	P-Channel	
Drain - Source Voltage		V_{DS}	20	-20	V
Gate - Source Voltage		V_{GS}	±8	±8	V
Continuous Drain Current	T_A = 25℃	I_D	1.5	-1.3	A
Continuous Drain Current	T_A = 75℃		0.9	-0.78	A
Pulsed Drain Current		I_{DM}	4.5	-3.9	A
Power Dissipation		P_D	0.3		mW
Thermal Resistance from Junction to Ambient[2]		$R_{\theta JA}$	340		℃/W
Junction Temperature		T_J	150	150	℃
Storage Temperature		T_{STG}	-55~ +150	-55~ +150	℃

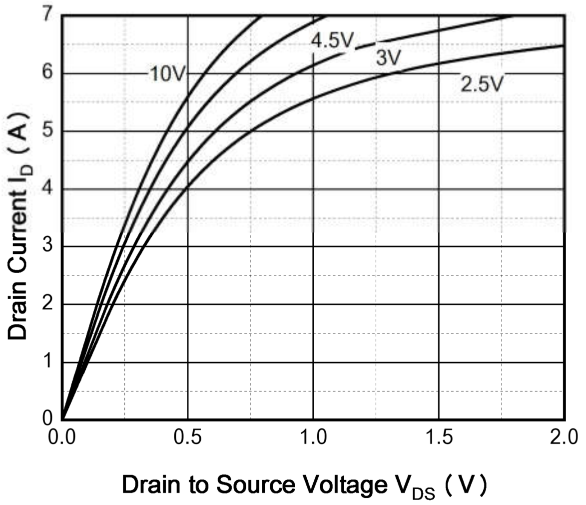
Channel Electrical Characteristics-N（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D= 250μA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 20V, V_{GS}= 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±8V, V_{DS}= 0V			±20	μA
		V_{GS}= ±5V, V_{DS}= 0V			±10	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.45	0.65	0.90	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= 4.5V, I_D= 0.8A		100	150	mΩ
		V_{GS}= 2.5V, I_D= 0.5A		120	200	
Forward transconductance	g_{FS}	V_{DS}= 5V, I_D= 2A		1.1		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 10V, V_{GS}= 0V, f = 1.0MHz		60		pF
Output Capacitance	C_{oss}			17		
Reverse Transfer Capacitance	C_{rss}			15		
Gate resistance	Rg	V_{DS}= 0V,V_{GS}= 0V, f= 1MHz		200		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= 10V, I_D= 1A, V_{GS}= 4.5V		1.0		nC
Gate-source Charge	Q_{gs}			0.17		
Gate-drain Charge	Q_{gd}			0.21		
Turn-on Delay Time	$t_{d(on)}$	V_{DS}= 10V, I_D= 1A, V_{GS}= 4.5V, R_{GEN}= 3Ω		3.35		ns
Turn-on Rise Time	t_r			3.05		
Turn-off Delay Time	$t_{d(off)}$			42.6		
Turn-off Fall Time	t_f			26		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_S= 1A			1.2	V

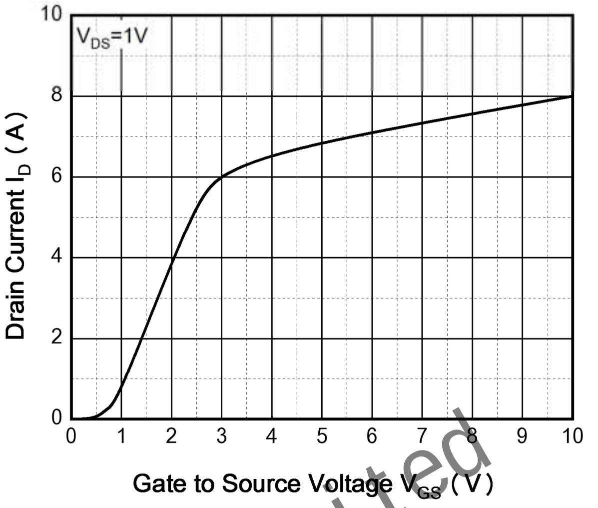
Channel Electrical Characteristics-P（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D= -250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -20V, V_{GS}= 0V			-1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±8V, V_{DS}= 0V			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.45	-0.65	-1.0	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= -4.5V, I_D= -0.8A		270	400	mΩ
		V_{GS}= -2.5V, I_D= -0.5A		370	520	
Forward transconductance	g_{FS}	V_{DS}= -5V, I_D= -0.5A		1.1		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= -10V, V_{GS}= 0V, f = 1.0MHz		70		pF
Output Capacitance	C_{oss}			16		
Reverse Transfer Capacitance	C_{rss}			10		
Gate resistance	Rg	V_{DS}= 0V,V_{GS}= 0V, f= 1MHz		330		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= -10V, I_D= -1A, V_{GS}= -4.5V		1.5		nC
Gate-source Charge	Q_{gs}			0.39		
Gate-drain Charge	Q_{gd}			0.32		
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= -10V,V_{GEN}= -4.5V, I_D= -1A,R_{GEN}= 6Ω		18.5		ns
Turn-on Rise Time	t_r			24.5		
Turn-off Delay Time	$t_{d(off)}$			112		
Turn-off Fall Time	t_f			57		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_S= -1A			-1.2	V

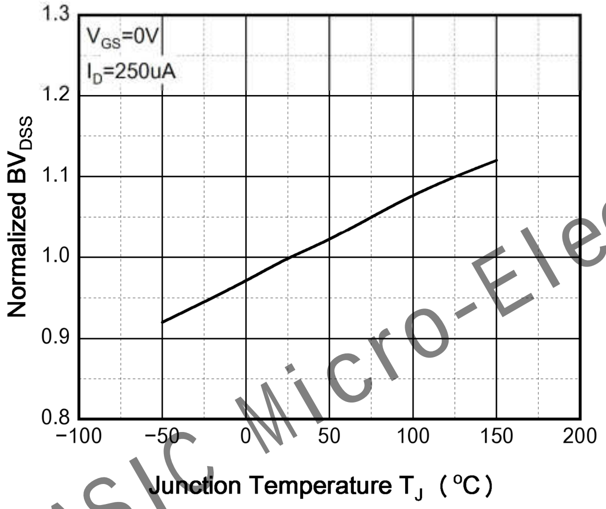
Typical Characteristic-N



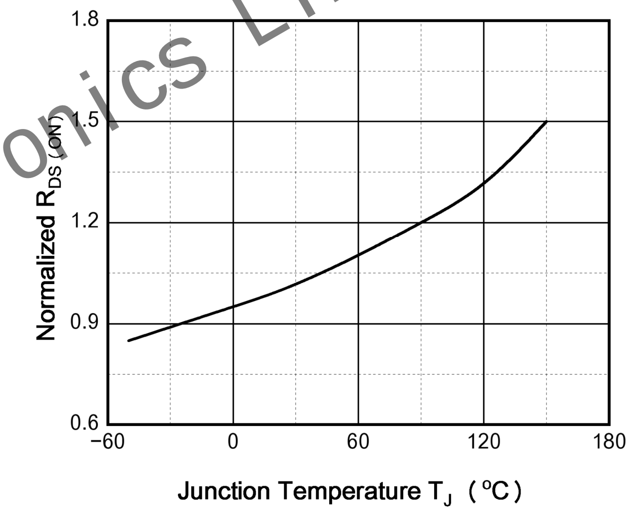
Output Characteristics



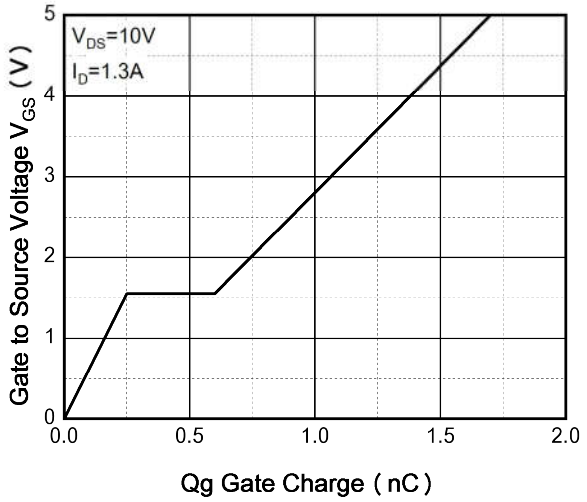
Transfer Characteristics



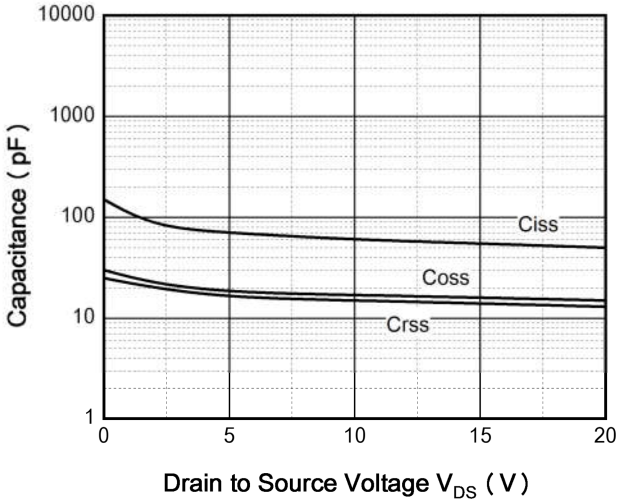
BV_{DSS} vs Junction Temperature



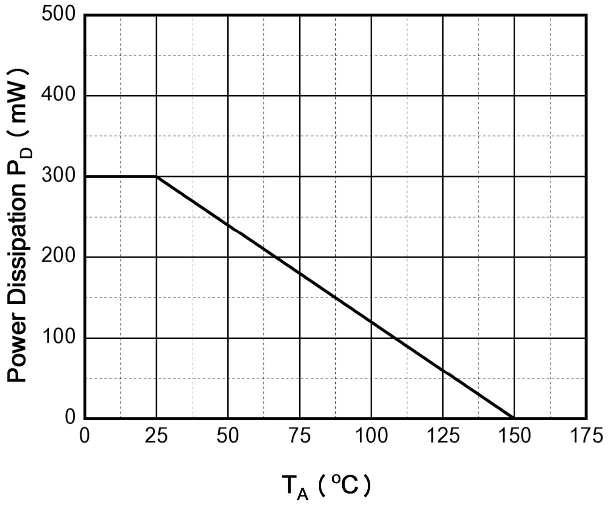
$R_{DS(ON)}$ vs Junction Temperature



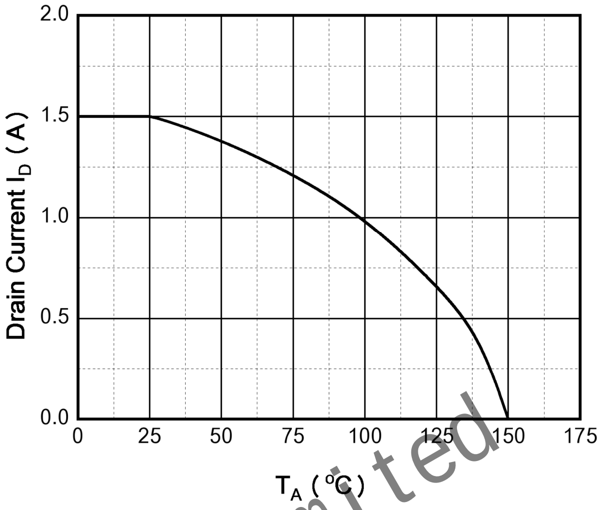
Gate Charge Characteristics



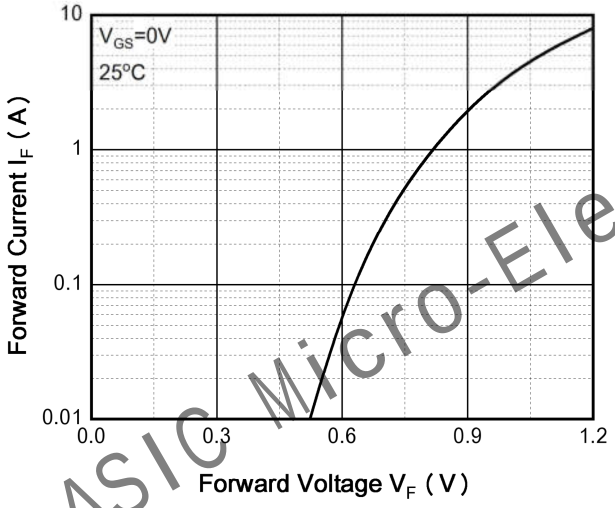
Capacitance Characteristics



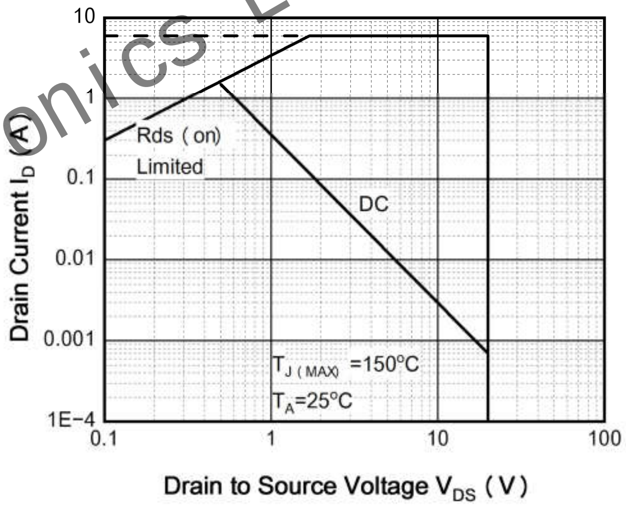
Power Dissipation



Drain Current

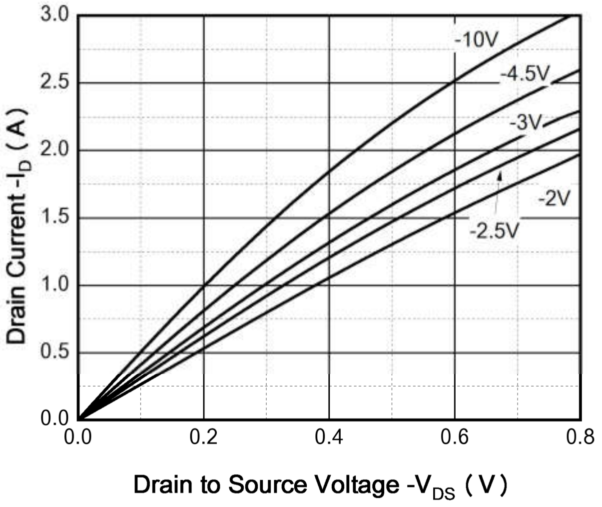


Body-Diode Characteristics

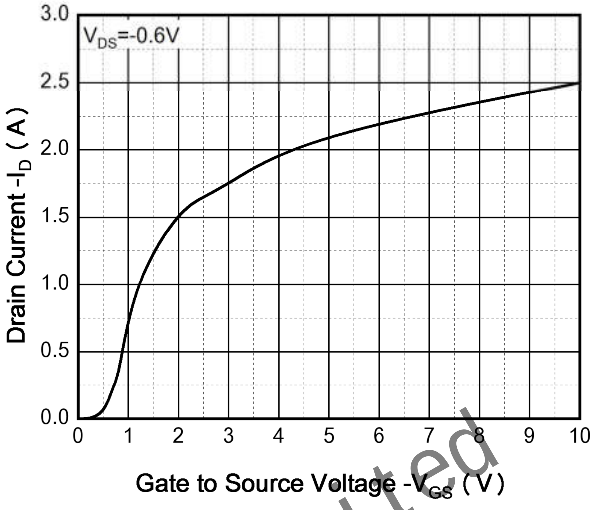


Maximum Safe Operating Area

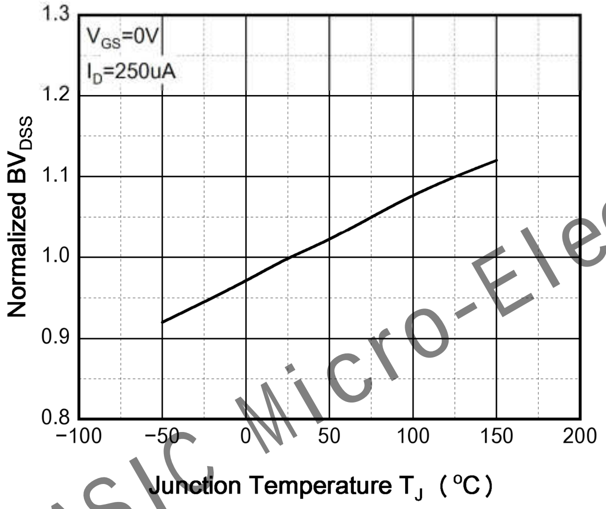
Typical Characteristic-P



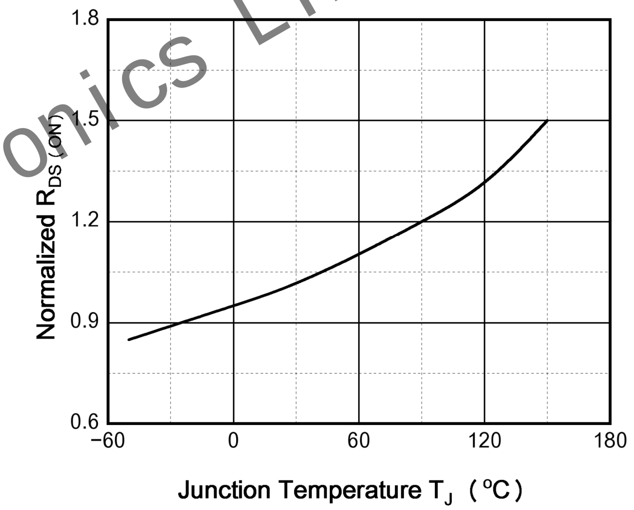
Output Characteristics



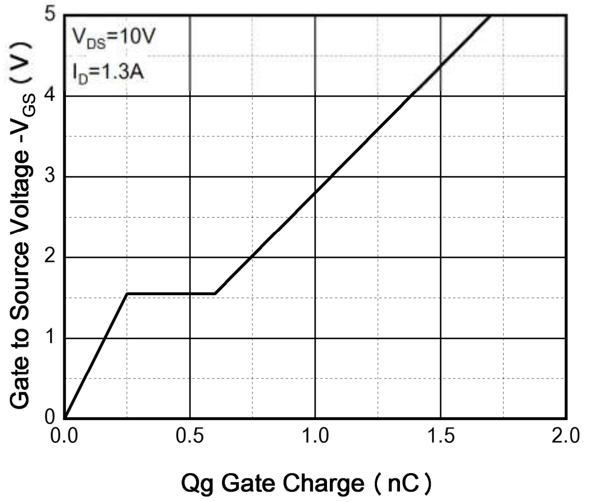
Transfer Characteristics



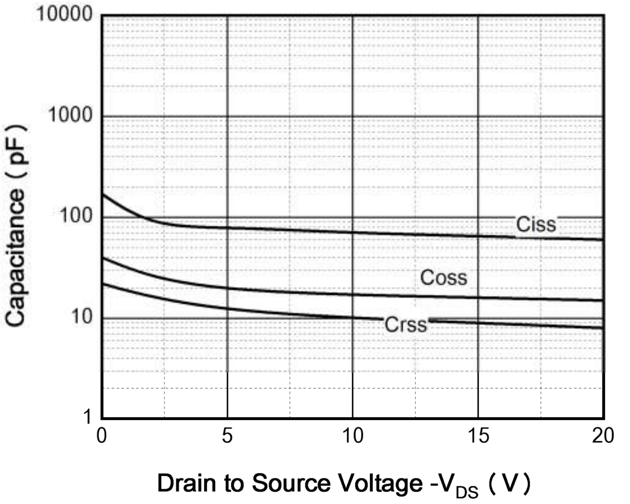
BV$_{DSS}$ vs Junction Temperature



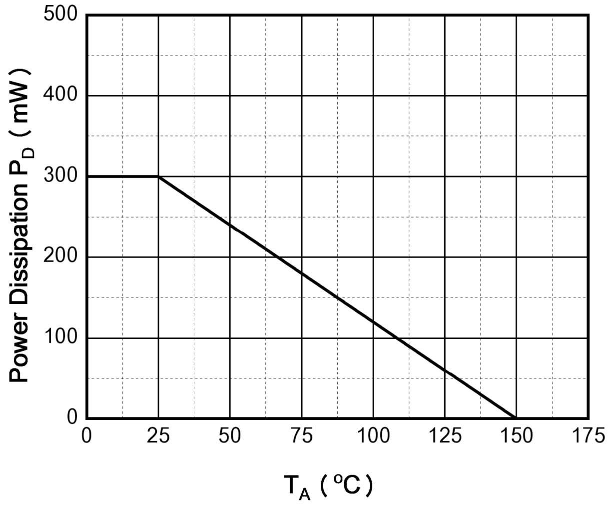
R$_{DS(ON)}$ vs Junction Temperature



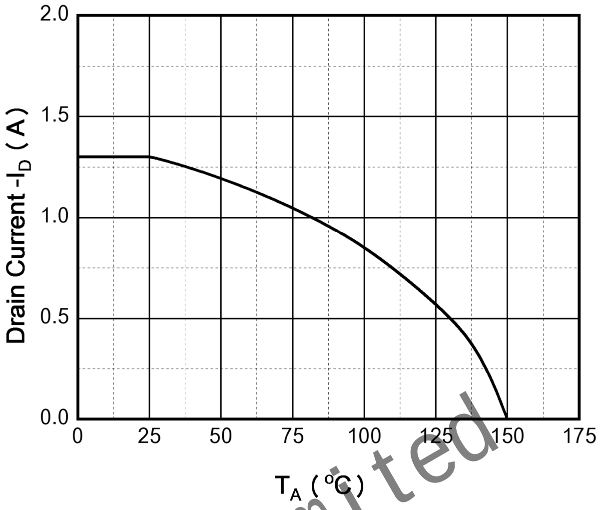
Gate Charge Characteristics



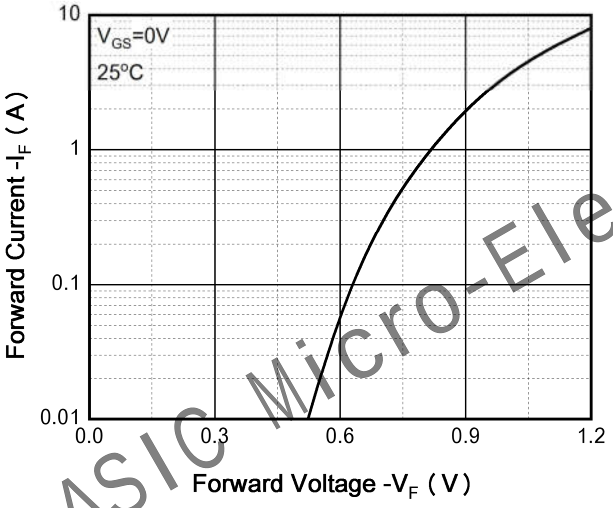
Capacitance Characteristics



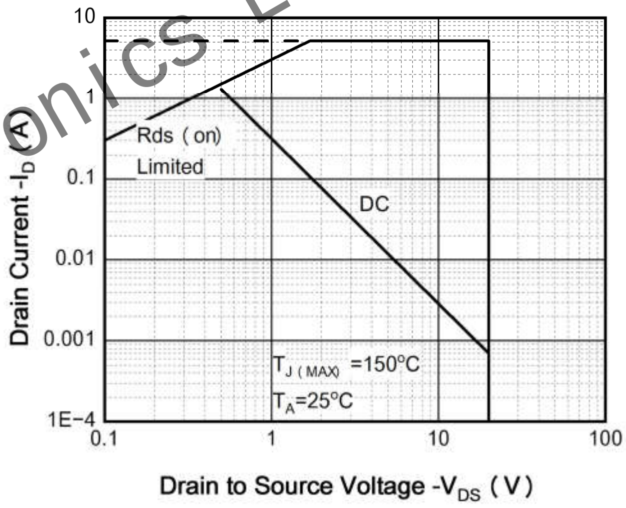
Power Dissipation



Drain Current



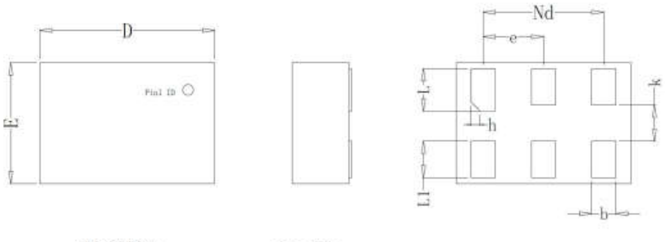
Body-Diode Characteristics



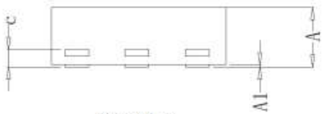
Maximum Safe Operating Area

Dimension

DFN1.45*1.0-6L



Top View   Side View   Bottom View



Side View

Symbol	Millimeters		
	Min.	Nom	Max.
A	0.425	0.47	0.525
A1	--	0.02	0.05
b	0.15	0.20	0.25
c	0.127 REF		
D	1.35	1.45	1.55
Nd	1.00 BSC		
e	0.50 BSC		
E	0.90	1.00	1.10
h	0.075 TYP		
k	0.25	0.30	0.35
L	0.30	0.35	0.40
L1	0.25	0.30	0.35