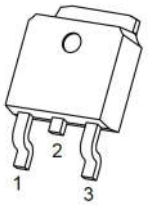
AN4N65FA0

600V N-channel Enhancement Mode Power

Product Summary

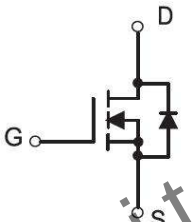
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
600V	2.2Ω@10V	4.3A

TO-252

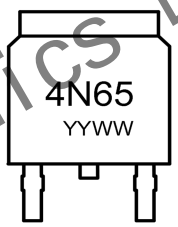


PIN1:GATE
PIN2:DRAIN
PIN3:SOURCE

Schematic diagram



Marking



4N65 : Device Code
YY : Year Code
WW : Week Code

Features

- Very Low On-resistance RDS(ON)
- LowCrss
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Applications

- Load Switch
- PWM Application
- Power Management

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

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	650	V
Drain Current	T_C = 25℃	I_D	4.3	A
	T_C = 100℃		3.2	A
Drain Current - Pulsed		I_{DM}	17	A
Gate-Source Voltage		V_{GSS}	±30	V
Single Pulsed Avalanche Energy[1]		E_{AS}	125	mJ
Power Dissipation	T_C = 25℃	P_D	89	W
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	1.4	℃/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	℃

Electrical Characteristics（T_A = 25℃ unless otherwise noted）

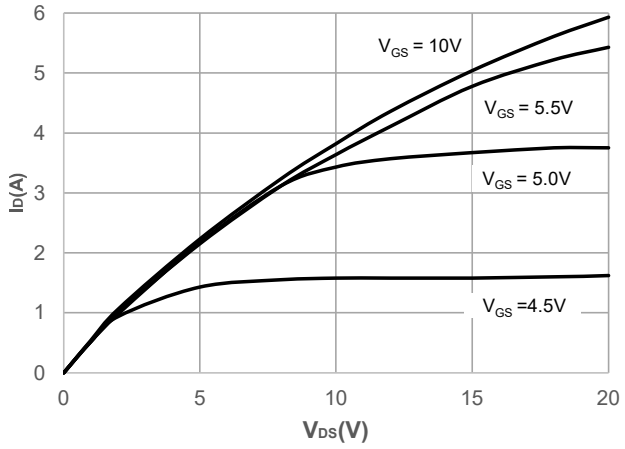
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D= 250μA	650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 650V, V_{GS}= 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±30V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	2	3	4	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= 10V, I_D= 2A		2.2	2.6	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 25 V, V_{GS}= 0 V, f= 1.0 MHz		580		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			10		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS}= 520V, I_D= 4A, V_{GS}= 10V		15		nC
Gate-source Charge	Q_{gs}			3.5		
Gate-drain Charge	Q_{gd}			6		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}= 10V, V_{DS}= 320V, R_{GEN} = 24Ω ,I_D= 4A ,T_j=25℃		13		ns
Turn-on Rise Time	t_r			22		
Turn-off Delay Time	$t_{d(off)}$			43		
Turn-off Fall Time	t_f			37		
Source - Drain Diode Characteristics						
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_{SD} = -20A,T_J = 25℃			1.2	V
Reverse Recovery Time	t_{rr}	I_F =4A,d_{iF}/d_t =100A /μs		280		ns
Reverse Recovery Charge	Q_{rr}			2		μC

Note：

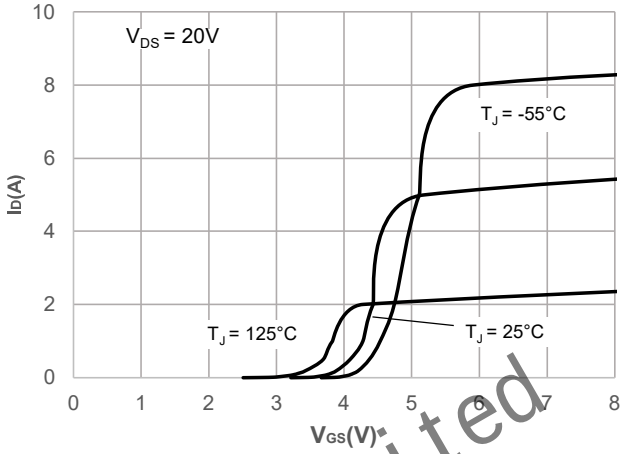
1. E_{AS} condition: T_J =25℃, V_{DD} =50V, V_G =10V, R_G =25Ω, L=10mH

Typical Characteristic

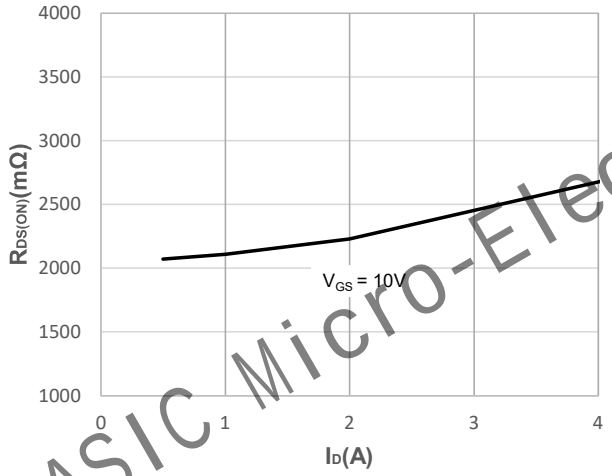
Output Characteristics



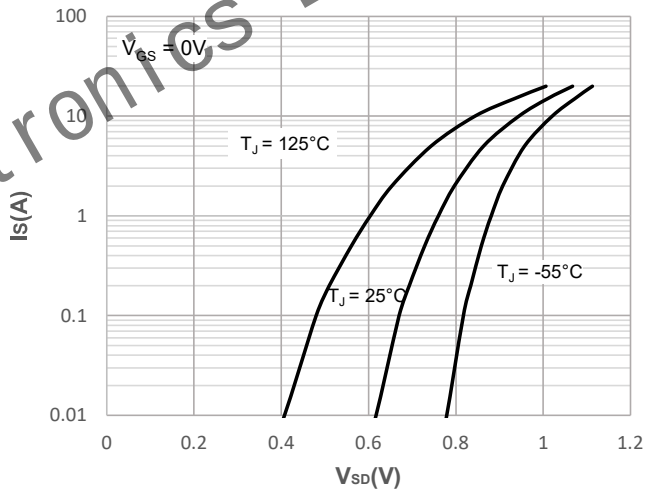
Typical Transfer Characteristics



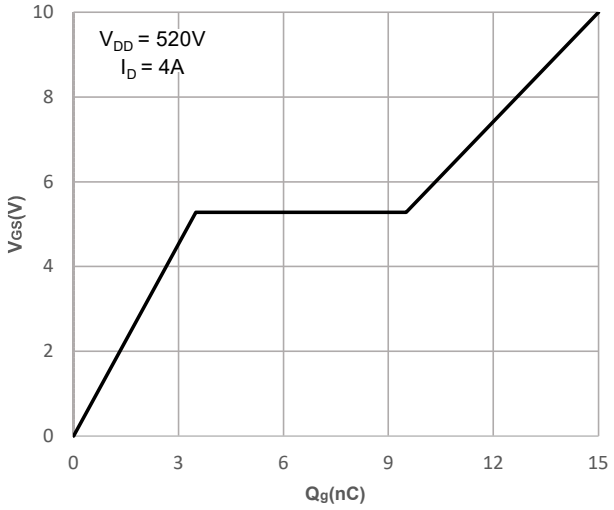
On-resistance vs. Drain Current



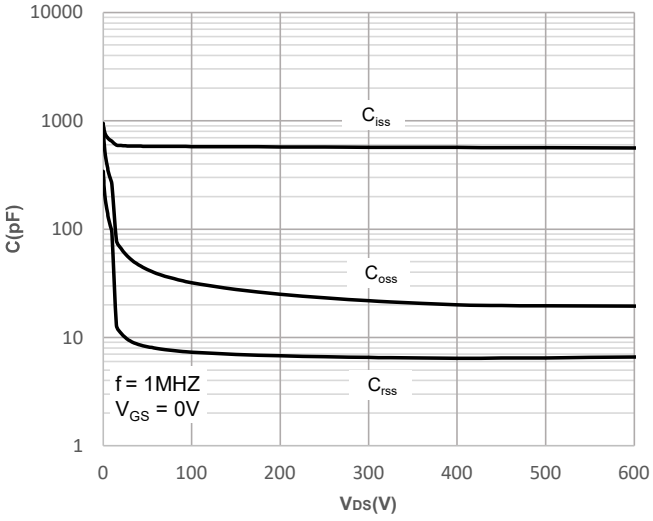
Body Diode Characteristics



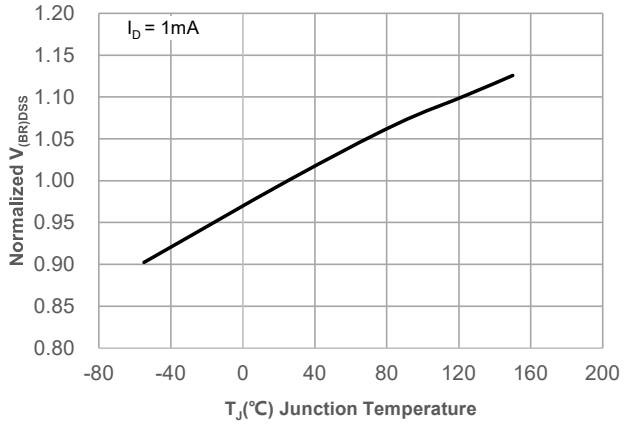
Gate Charge Characteristics



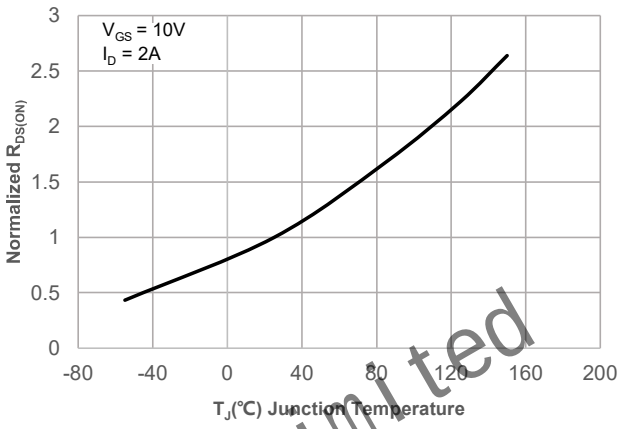
Capacitance Characteristics



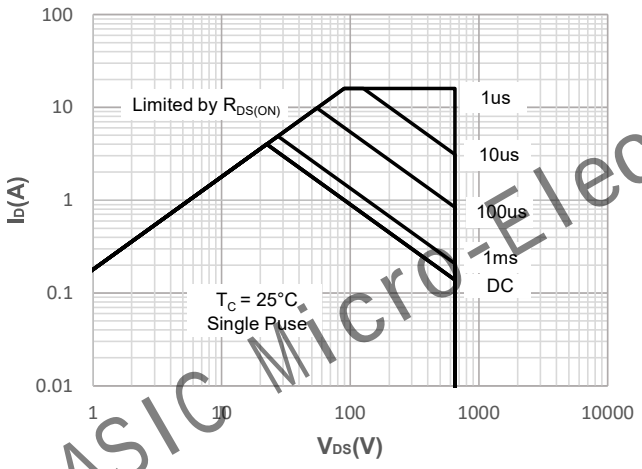
Normalized Breakdown voltage vs. Junction Temperature



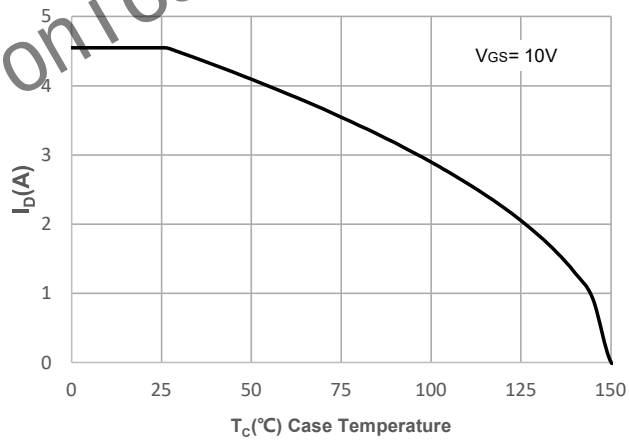
Normalized on Resistance vs. Junction Temperature



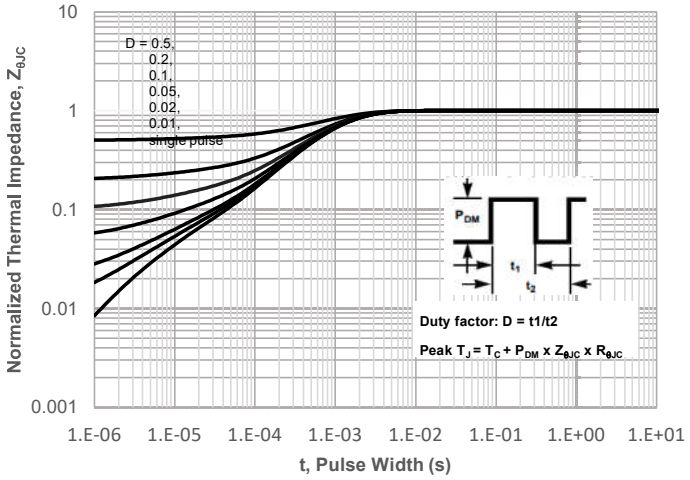
Maximum Safe Operating Area



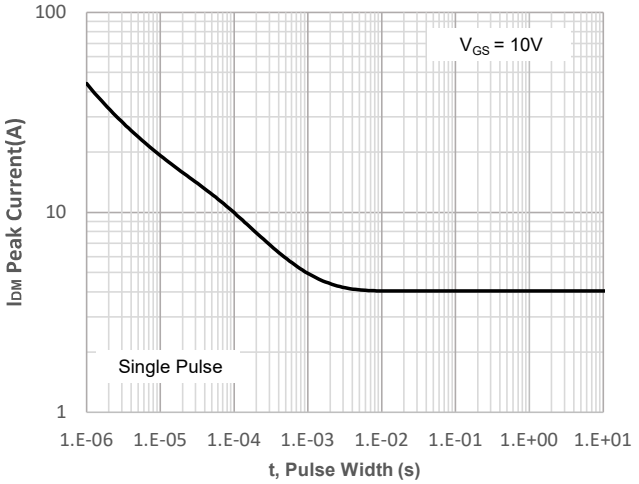
Maximum Continuous Drian Current vs. Case Temperature



Normalized Maximum Transient Thermal Impedance

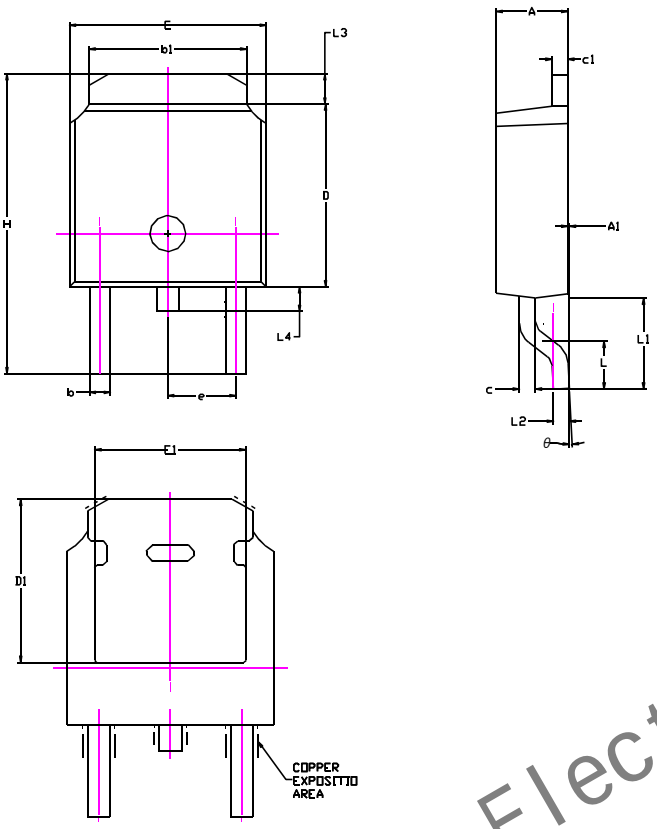


Peak Current Capacity



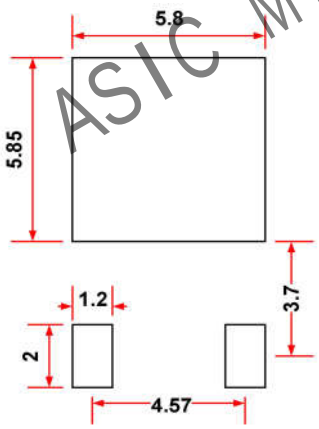
Dimension

TO252



Symbol	Millimeters		
	Min.	Max.	Min.
A	2.20	2.40	A
A1	0.00	0	A1
b	0.	0.77	b
b1	5.17	5.42	b1
c	0.46	0.60	c
c1	0.46	0.58	c1
D	6.00	6.20	D
D1		5.15	D1
E	6.50	6.70	E
E1		4.83	E1
e		2.286	e
H	9.40	1	H
L	1.40	1.70	L
L1		2.90	L1
L2		0.508	L2
L3	0.89	1.27	L3
L4	0.64	1.01	L4
θ	0°	10°	θ

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: ±0.05mm
3. The pad layout is for reference only
4. Unit: mm