

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	15m Ω @10V	20A
	17m Ω @4.5V	

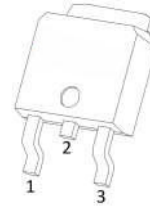
Features

- Very Low On-resistance $R_{DS(on)}$
- Low C_{rss}
- Fast switching
- Improved dv/dt capability

Applications

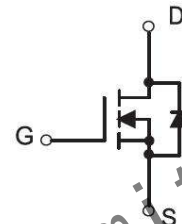
- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

TO-252

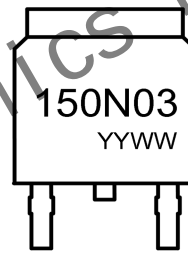


PIN1:GATE
PIN2:SOURCE
PIN3:DRAIN

Schematic diagram



Marking



150N03 : Device Code
YY : Year Code
WW : Week Code

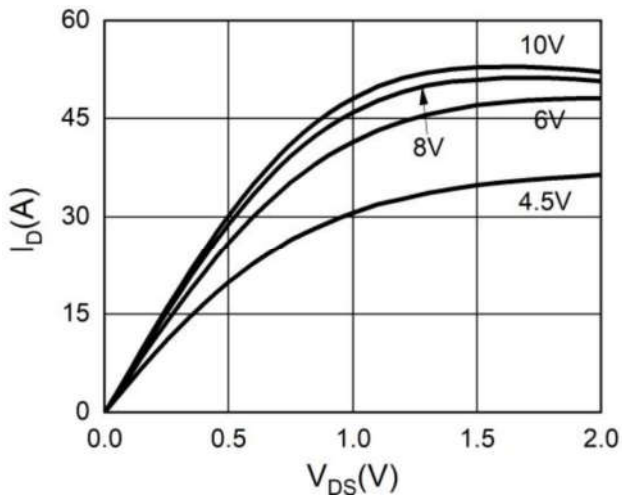
Absolute Maximum rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current	$T_C = 25^\circ\text{C}$	I_D	20	A
	$T_C = 100^\circ\text{C}$		15	A
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	40	W
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	3.12	$^\circ\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

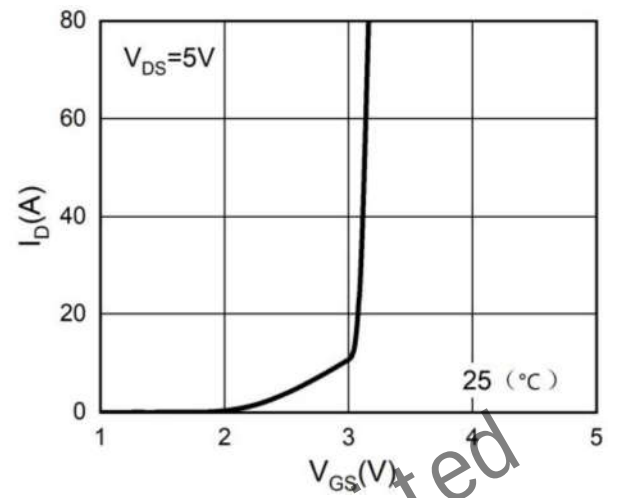
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.5	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 5.8A		17	25	mΩ
		V _{GS} = 4.5V, I _D = 5A		20	35	
Forward transconductance	g _{FS}	V _{DS} = 5V, I _D = 1A		4		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f= 1MHz		590		pF
Output Capacitance	C _{oss}			75		
Reverse Transfer Capacitance	C _{rss}			60		
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 3A		20		nC
Gate-source Charge	Q _{gs}			2		
Gate-drain Charge	Q _{gd}			2		
Turn-on Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V, R _L =5Ω, R _G = 3Ω		4		ns
Turn-on Rise Time	t _r			10		
Turn-off Delay Time	t _{d(off)}			25		
Turn-off Fall Time	t _f			2		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 1A			1.2	V

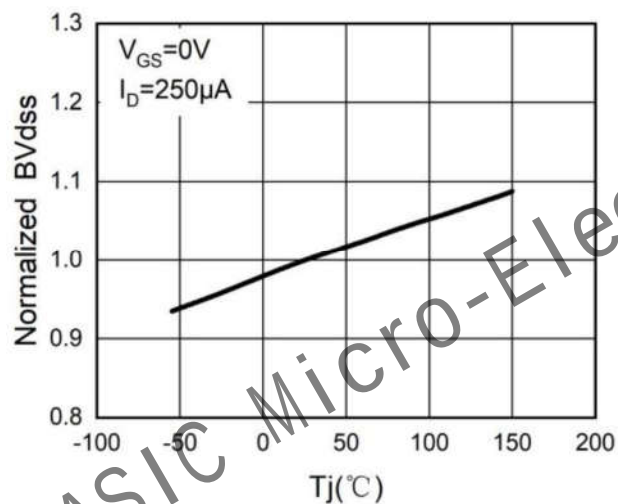
Typical Characteristic



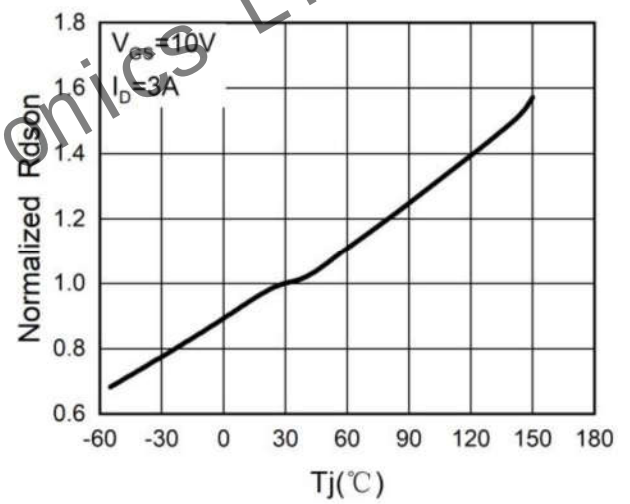
Output Characteristics



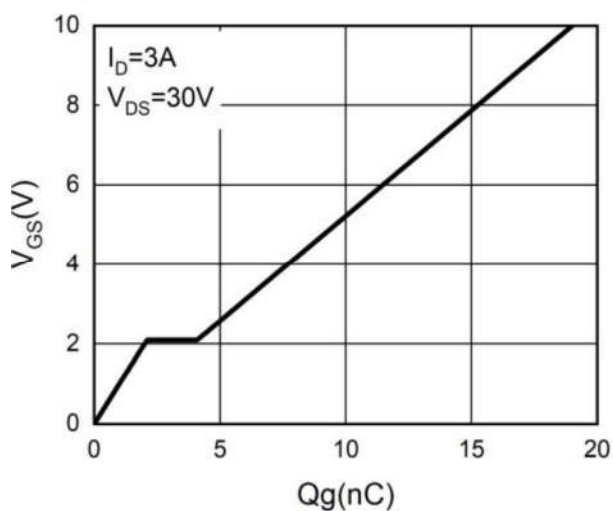
Transfer Characteristics



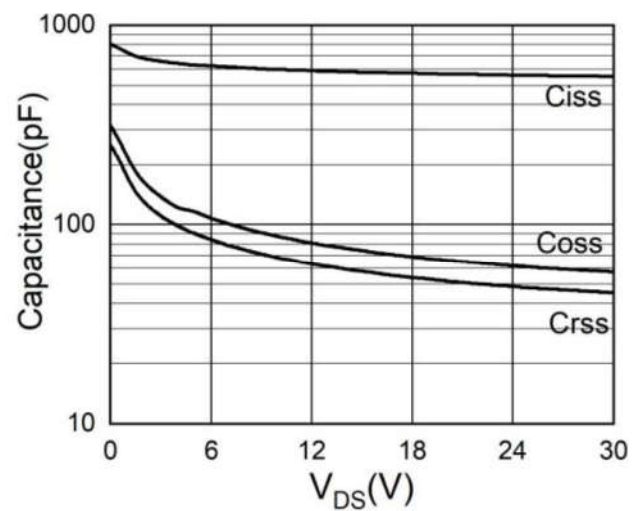
BV_{DS} vs Junction Temperature



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



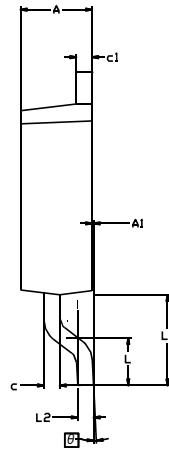
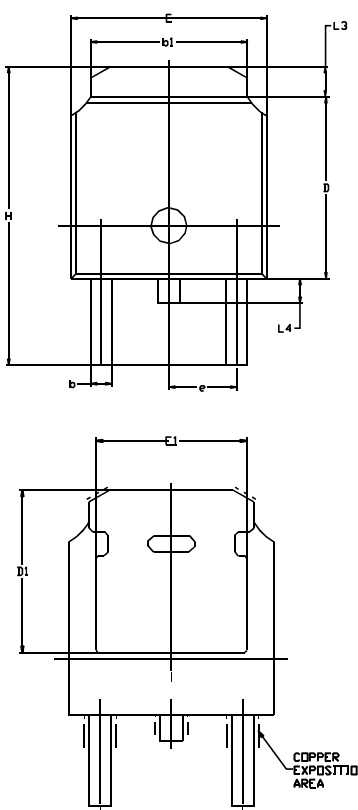
Gate Charge Characteristics



Capacitance Characteristics

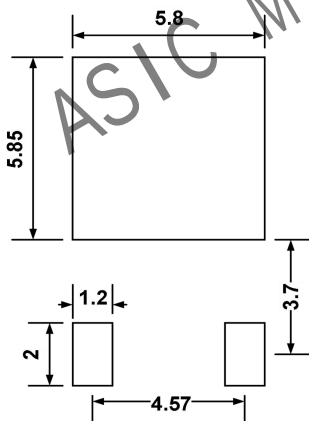
Dimension

TO252



Symbol	Millimeters	
	Min.	Max.
A	2.20	2.40
A1	0.00	0.127
b	0.635	0.77
b1	5.17	5.42
c	0.46	0.60
c1	0.46	0.58
D	6.00	6.20
D1	5.15 REF	
E	6.50	6.70
E1	4.83 REF	
e	2.286 BSC	
H	9.40	10.40
L	1.40	1.70
L1	2.90 REF	
L2	0.508 BSC	
L3	0.89	1.27
L4	0.64	1.01
θ	0°	10°

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm