

100V N-Channel Power MOSFET

DESCRIPTION :

- Advanced Trench Technology
- Low Gate Charge
- Excellent $R_{DS(ON)}$
- $R_{DS(ON)} < 125m\Omega @ V_{GS} = 10V$
- RoHS compliant

V_{DSS}	100V
I_D	3.0A
$R_{DS(ON)_MAX} @ V_{GS}=10V$	125m Ω

TYPICAL APPLICATIONS :

- Power Management
- Load Switch
- PWM Application



SOT-89

MAXIMUM RATINGS (at $T_A = 25^\circ C$, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_A=25^\circ C$ $T_A=100^\circ C$	I_D	3 2	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	12	A
Power dissipation		P_D	1.8	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

Notes : 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	69	$^\circ C/W$

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	100			V
Zero Gate Voltage Drain Current VDS = 100 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ± 20 V, VDS = 0V	I_{GSS}			± 100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.0	1.5	2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 3A VGS = 4.5V, ID = 2A	$R_{DS(on)}$		95 100	125 140	m Ω
Input capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{iss}		765		pF
Output capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{oss}		38		pF
Reverse transfer capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{rss}		33		pF
Total Gate Charge VDS= 50V, ID= 2A, VGS=10V	Q_G		18		nC
Gate to Source Charge VDS= 50V, ID= 2A, VGS=10V	Q_{GS}		2.5		nC
Gate to Drain Charge VDS= 50V, ID= 2A, VGS=10V	Q_{GD}		4		nC
Turn-on delay time VDS=50 V, VGS= 10V, ID= 3A, $R_G=1.8\Omega$	$t_{d(ON)}$		7.5		ns
Rise time VDS=50 V, VGS= 10V, ID= 3A, $R_G=1.8\Omega$	tr		6		ns
Turn-off delay time VDS=50 V, VGS= 10V, ID= 3A, $R_G=1.8\Omega$	$t_{d(OFF)}$		21		ns
Fall time VDS=50 V, VGS= 10V, ID= 3A, $R_G=1.8\Omega$	tf		9		ns

Body Diode

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage $V_{GS} = 0V, I_S = 3A$	V_{SD}			1.2	V
Maximum Continuous Drain to Source Diode Forward Current	I_S			3	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}			12	A
Revers Recovery Time $I_F = 3A, di/dt = 100A/\mu s$	T_{rr}		21		ns
Revers Recovery Charge $I_F = 3A, di/dt = 100A/\mu s$	Q_{rr}		22		nC

Typical Performance Characteristics

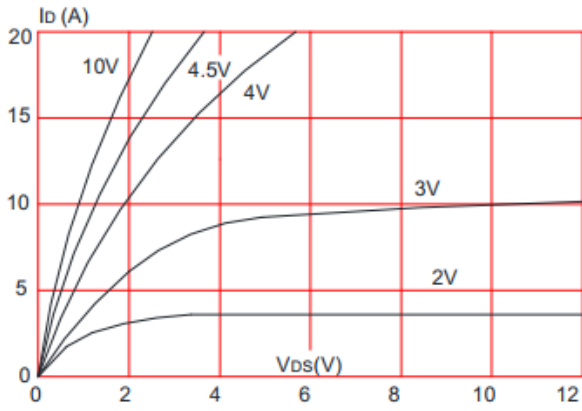


Figure 1. Output Characteristics

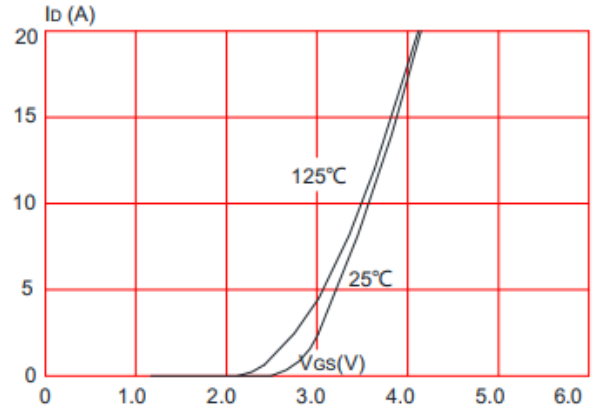


Figure 2. Typical Transfer Characteristics

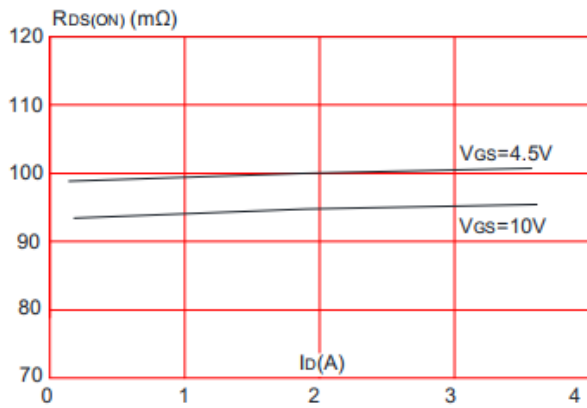


Figure 3. On-resistance vs. Drain Current

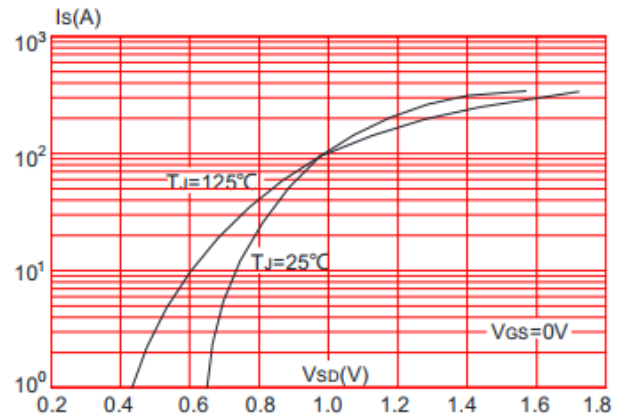


Figure 4. Body Diode Characteristics

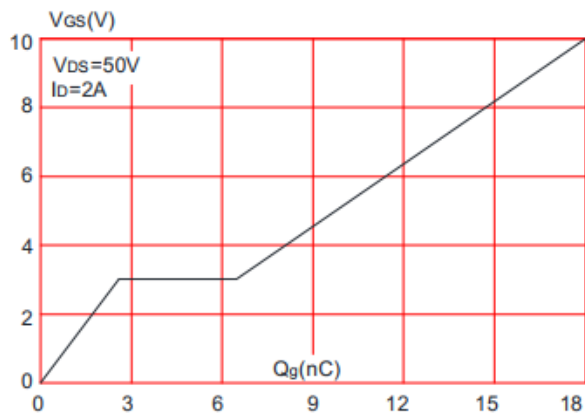


Figure 5. Gate Charge Characteristics

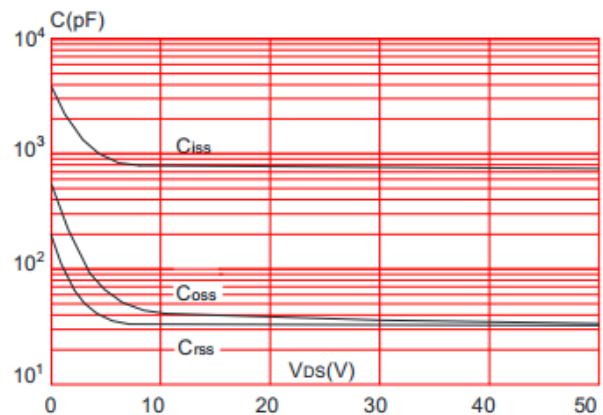


Figure 6. Capacitance Characteristics

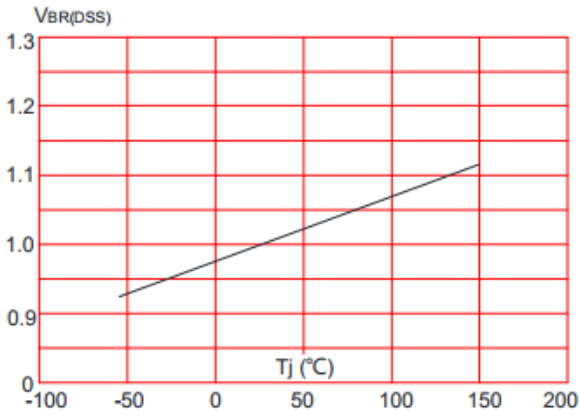


Figure 7. Normalized Breakdown Voltage vs. Junction Temperature

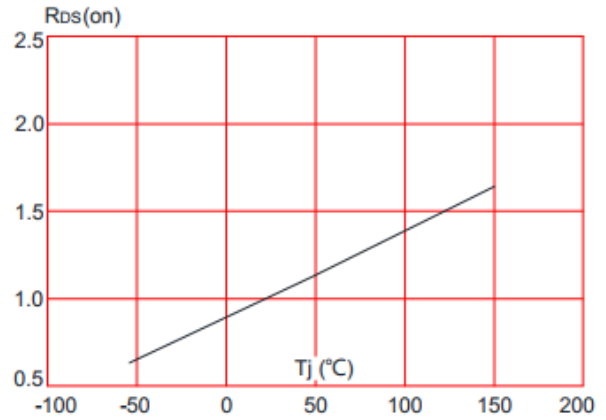


Figure 8. Normalized on Resistance vs. Junction Temperature

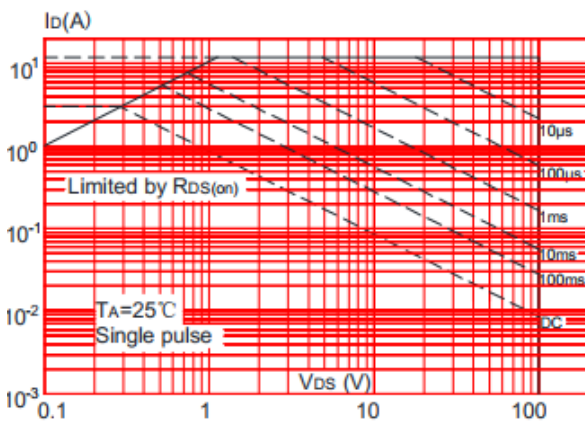


Figure 9. Maximum Safe Operating Area

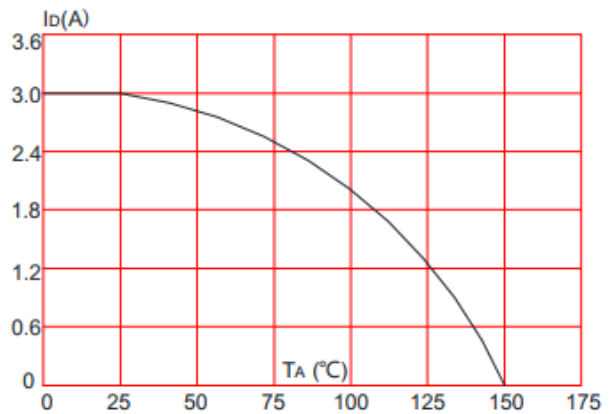


Figure 10. Maximum Continuous Drian Current vs. Ambient Temperature

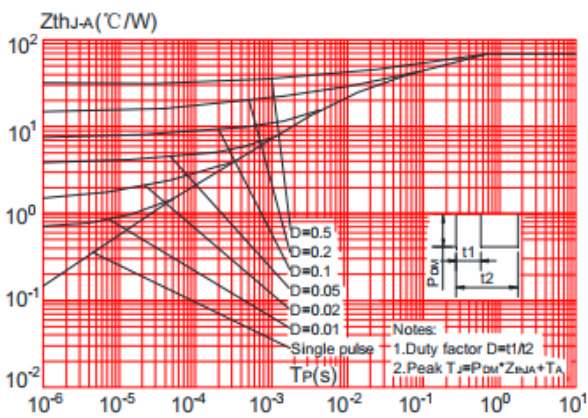
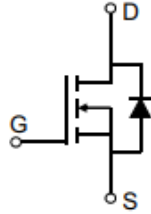
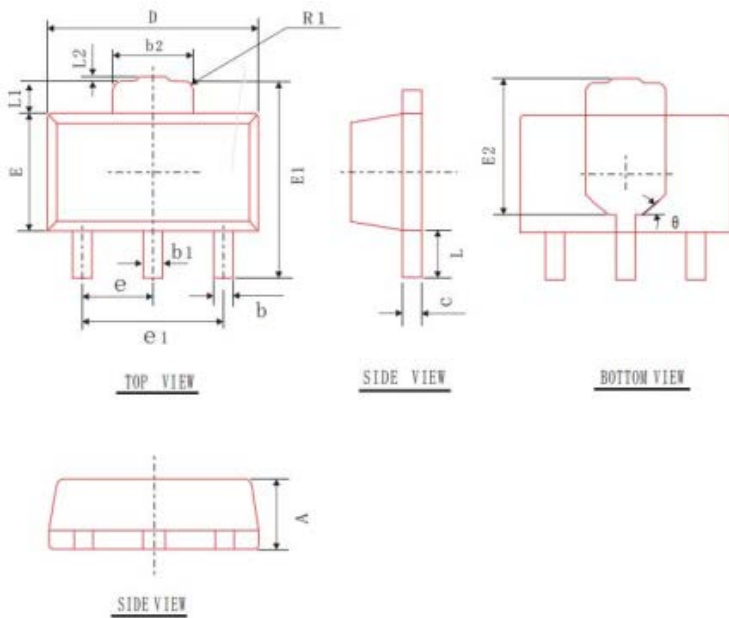


Figure 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

- Circuit diagram



- Package outlines : Dimensions in millimeters



SYMBOL	MIN	NOM	MAX
A	1.40	1.50	1.60
b	0.36	0.40	0.50
b 1	0.44	0.48	0.58
b 2	1.60	1.70	1.80
c	0.35	0.40	0.45
D	4.40	4.50	4.60
E	2.40	2.50	2.60
E 1	4.00	4.20	4.40
E 2	2.65	2.85	3.05
e 1	2.80	3.00	3.20
L	0.90	1.00	1.10
L 1	0.60	0.70	0.80
L 2	0.075 REF		
R 1	0.2 BSC		
θ	45° TYP		
e	1.5 BSC		

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