30V N-Channel Enhancement Mode Power MOSFET

DESCRIPTION：

·Advanced Trench Technology

·Excellent $R_{DS(ON)}$ and Low Gate Charge

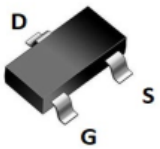
V_{DSS}	30V
I_D	4A
$R_{DS(ON)_MAX}$ @V_{GS}=10V	44mΩ

TYPICAL APPLICATIONS：

·Power Management

·Load Switch

·PWM Application



SOT-23

MAXIMUM RATINGS (at T_A = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_A=25℃ T_A=100℃	I_D	4 3	A
Pulsed Drain Current (1)		I_{DM}	16	A
Power dissipation	T_A=25℃	P_D	1.2	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

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

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THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	103	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	30			V
Zero Gate Voltage Drain Current VDS = 30 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±12V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	0.5	1.0	1.4	V
Drain-Source On-State Resistance VGS = 10V, ID = 4A VGS = 4.5V, ID = 3A VGS = 2.5V, ID = 2A	$R_{DS(on)}$		 34 37 46	 44 48 60	mΩ
Input capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{iss}		414		pF
Output capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{oss}		36		pF
Reverse transfer capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{rss}		29		pF
Total Gate Charge VDD= 15V, ID= 2A,VGS= 0 to 4.5V	Q_G		4.5		nC
Gate to Source Charge VDD= 15V, ID= 2A,VGS= 0 to 4.5V	Q_{GS}		1		nC
Gate to Drain Charge VDD= 15V, ID= 2A,VGS= 0 to 4.5V	Q_{GD}		1		nC
Turn-on delay time VDD=15 V, VGS= 4.5V, ID= 2A, R_{GEN}=3Ω	$t_{d\ (ON)}$		4		ns
Rise time VDD=15 V, VGS= 4.5V, ID= 2A, R_{GEN}=3Ω	tr		13		ns
Turn-off delay time VDD=15 V, VGS= 4.5V, ID= 2A, R_{GEN}=3Ω	$t_{d\ (OFF)}$		41		ns
Fall time VDD=15 V, VGS= 4.5V, ID= 2A, R_{GEN}=3Ω	tf		17		ns
Diode Forward Voltage VGS = 0V, IS = 4A	VSD			1.2	V
Maximum Continuous Body Diode Forward Current	IS			4	A
Maximum Pulsed Body Diode Forward Current	ISM			16	A
Revers Recovery Time IF=2A, di/dt = 100A/us	Trr		6		ns
Revers Recovery Charge IF=2A, di/dt = 100A/us	Qrr		1		nC

Typical Performance Characteristics

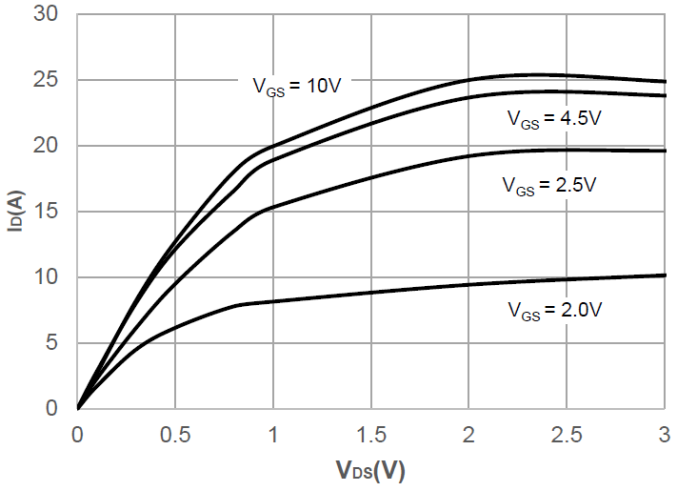


Figure 1. Output Characteristics

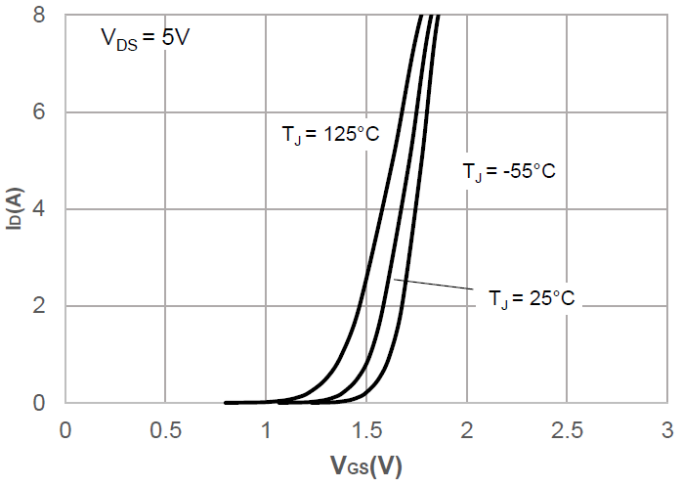


Figure 2. Typical Transfer Characteristics

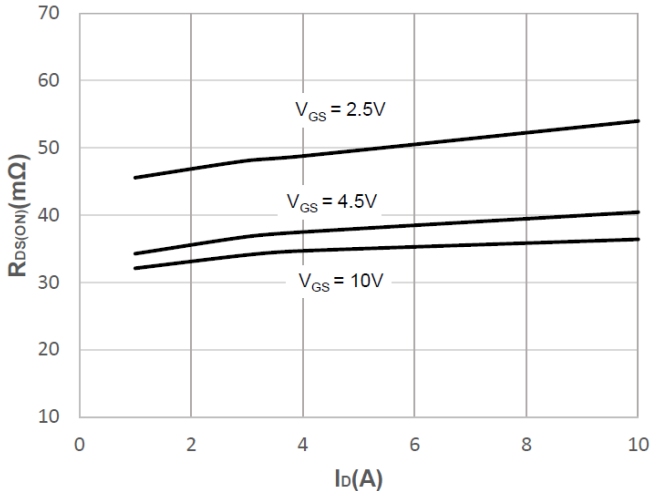


Figure 3. On-resistance vs. Drain Current

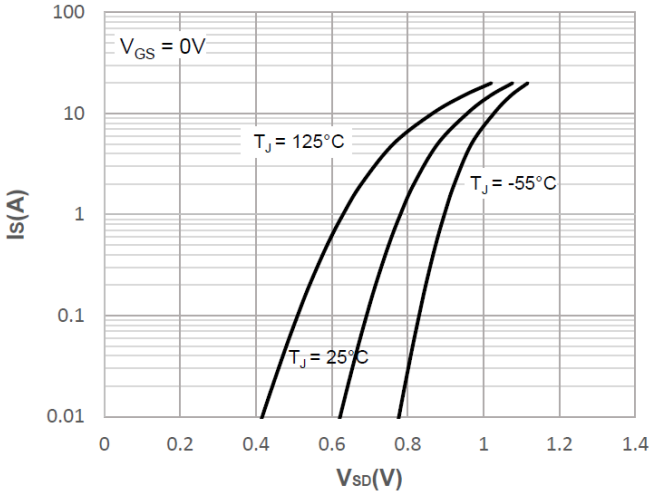


Figure 4. Body Diode Characteristics

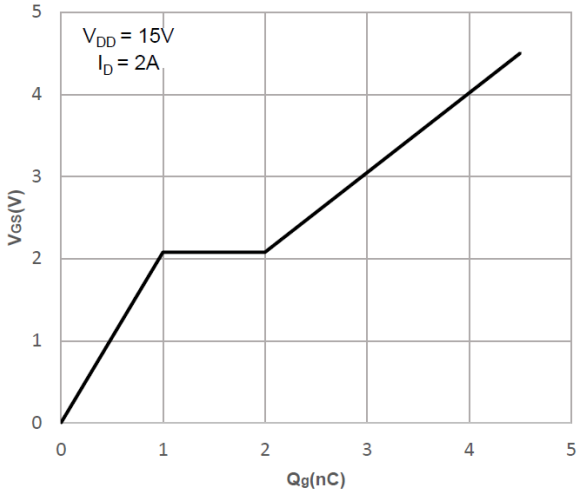


Figure 5. Gate Charge Characteristics

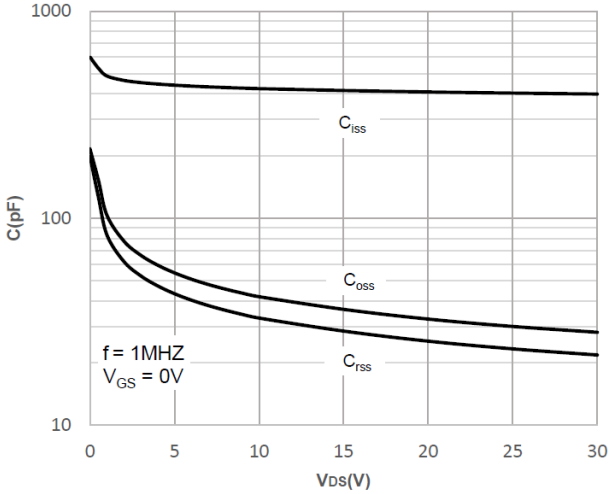


Figure 6. Capacitance Characteristics

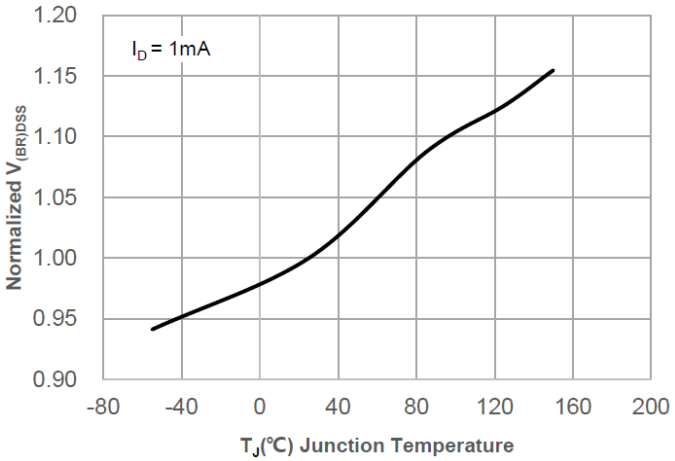


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

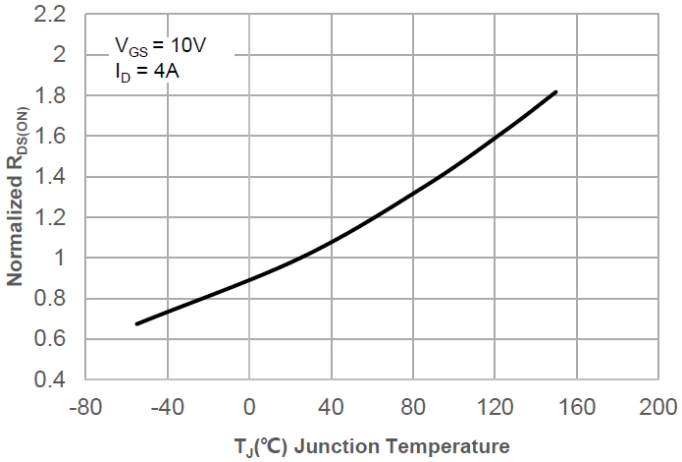


Figure 8. Normalized on Resistance vs. Junction Temperature

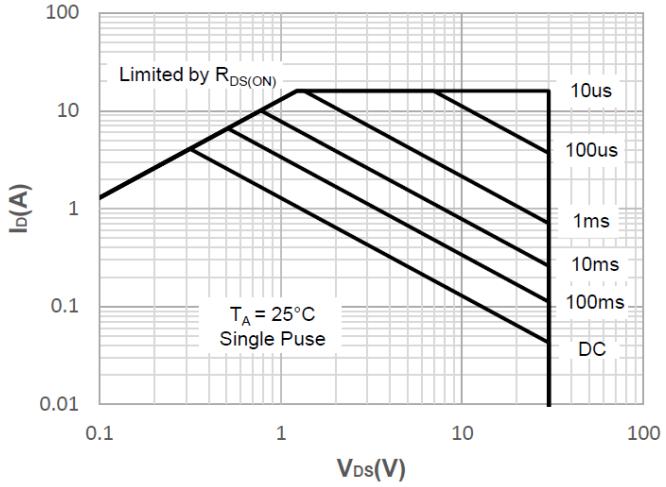


Figure 9. Maximum Safe Operating Area

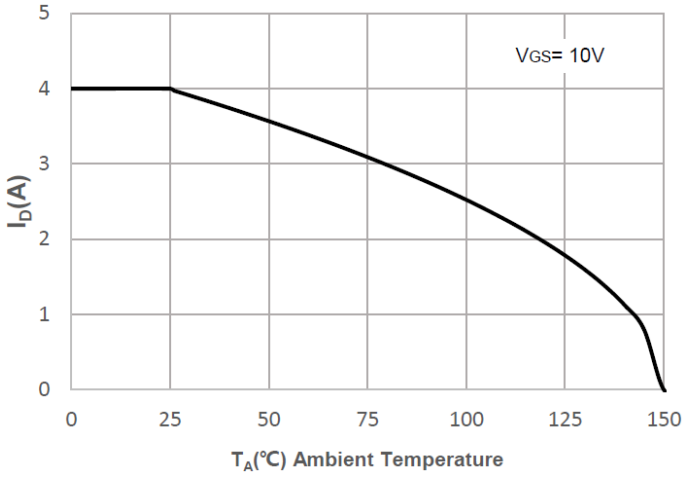


Figure 10. Maximum Continuous Drian Current vs. Ambient Temperature

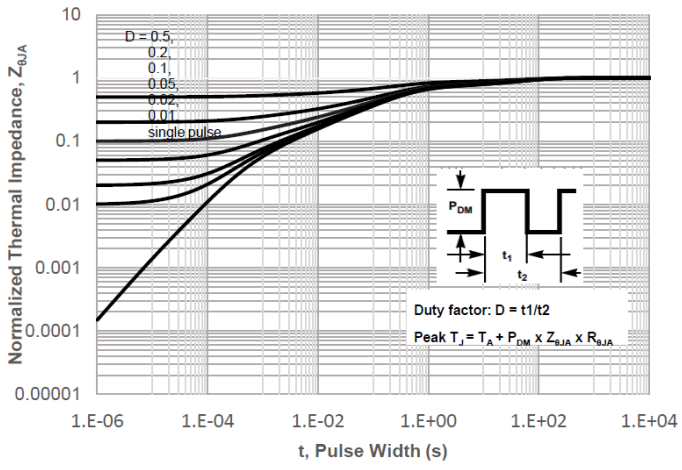


Figure 11. Normalized Maximum Transient Thermal Impedance

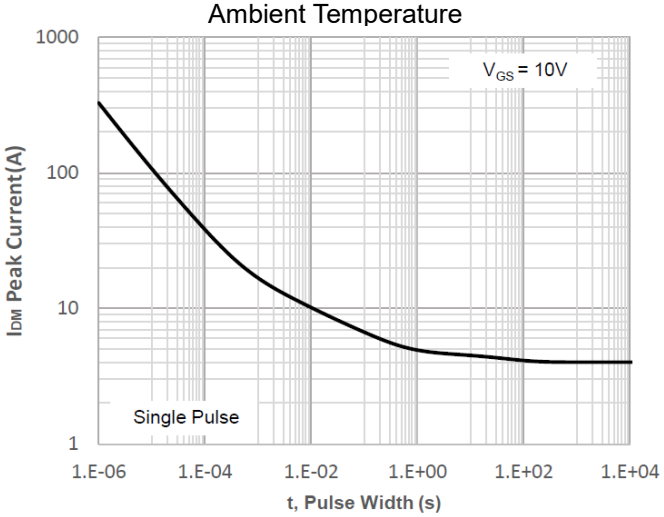
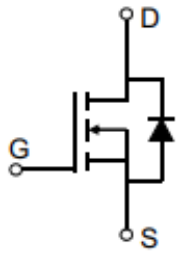
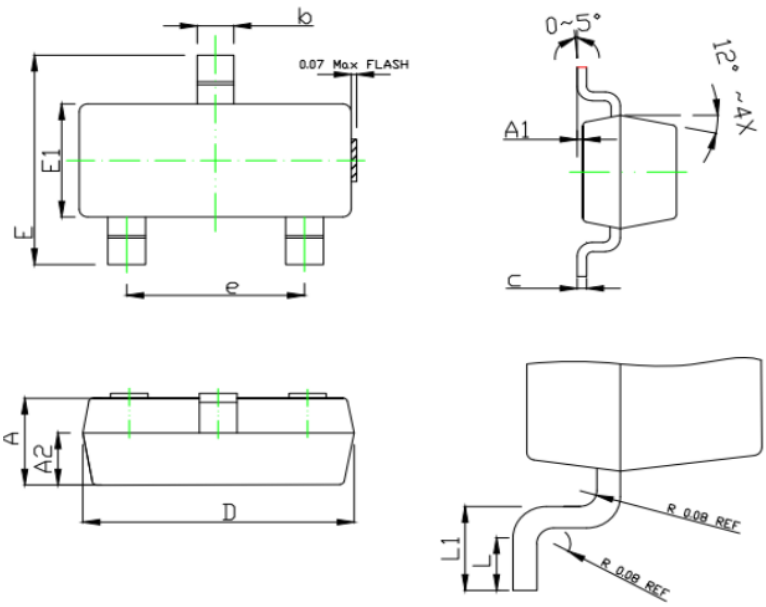


Figure 12. Peak Current Capacity

·Circuit diagram



·Package outlines : Dimensions in (mm)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
A1	0.01	0.05	0.10
b	0.35	0.40	0.45
c		0.11 BSC	
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
e		1.90 BSC	
L	0.20	–	–
L1	0.30	0.40	0.50
A2		0.60 REF	

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