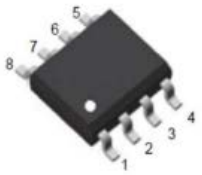
30V P-Channel Power MOSFET

DESCRIPTION：
- Excellent $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100%△Vds Tested
- Pb-Free Lead Plating
- RoHS compliant

V_{DS}	-30V
I_D @T_A=25℃	-9A
$R_{DS(ON)\_Typ.}$ @V_{GS}= -10V	19mΩ

TYPICAL APPLICATIONS：
- Load Switch
- PWM Application
- Power Management



SOP-8

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	-9 -5.9	A
Pulsed Drain Current (1)		I_{DM}	-36	A
Single Pulsed Avalanche Energy (2)		E_{AS}	25	mJ
Power dissipation		P_D	3.3	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting TJ=25℃, VDD= -15V, VG= -10V, RG=25ohm, L=0.5mH, IAS= -10A, VDD=0V during time in avalanche.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient	$R_{\theta JA}$	38	℃/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 = ±20V, 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 = -9A VGS = -4.5V, ID = -5A	$R_{DS(on)}$		 19 27	 25 38	mΩ
Input capacitance f=1MHz, VDS= -15 V, VGS=0 V	C_{iss}		1200		pF
Output capacitance f=1MHz, VDS= -15 V, VGS=0 V	C_{oss}		155		pF
Reverse transfer capacitance f=1MHz, VDS= -15 V, VGS=0 V	C_{rss}		139		pF
Total Gate Charge VDS= -15V, ID= -8A,VGS= -10V	Q_G		52		nC
Gate to Source Charge VDS= -15V, ID= -8A,VGS= -10V	Q_{GS}		9.8		nC
Gate to Drain Charge VDS= -15V, ID= -8A,VGS= -10V	Q_{GD}		8.3		nC
Turn-on delay time VDD= -15 V, VGS= -10V, ID= -1A, R_{GEN}=6Ω	td (ON)		13		ns
Rise time VDD= -15 V, VGS= -10V, ID= -1A, R_{GEN}=6Ω	tr		15		ns
Turn-off delay time VDD= -15 V, VGS= -10V, ID= -1A, R_{GEN}=6Ω	td (OFF)		198		ns
Fall time VDD= -15 V, VGS= -10V, ID= -1A, R_{GEN}=6Ω	tf		98		ns

Body Diode

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage V_{GS} = 0V, I_S = -9A	V_{SD}		-0.8	-1.2	V
Maximum Continuous Body Diode Forward Current	I_S			-9	A
Maximum Pulsed Body Diode Forward Current	I_{SM}			-36	A

Typical Performance Characteristics

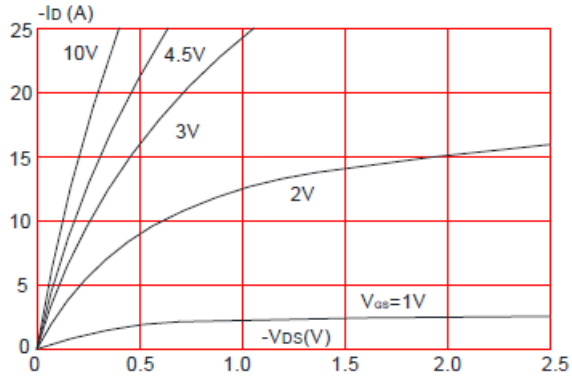


Figure 1. Output Characteristics

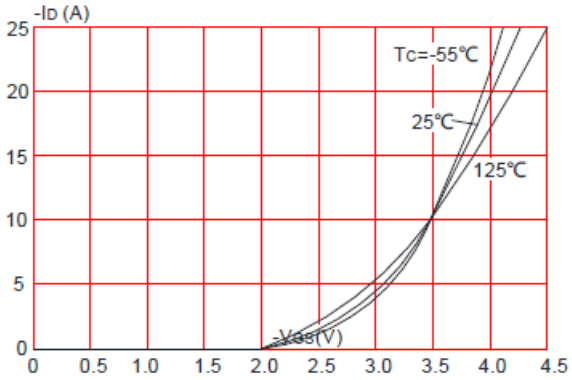


Figure 2. Typical Transfer Characteristics

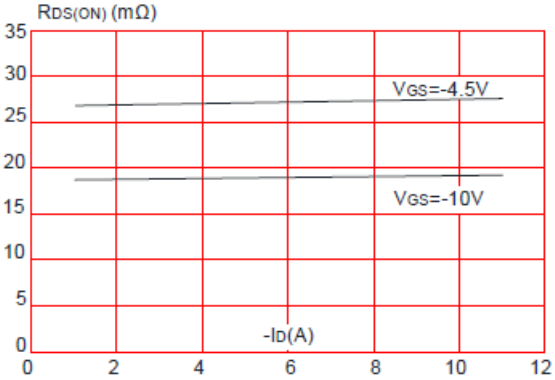


Figure 3. On-resistance vs. Drain Current

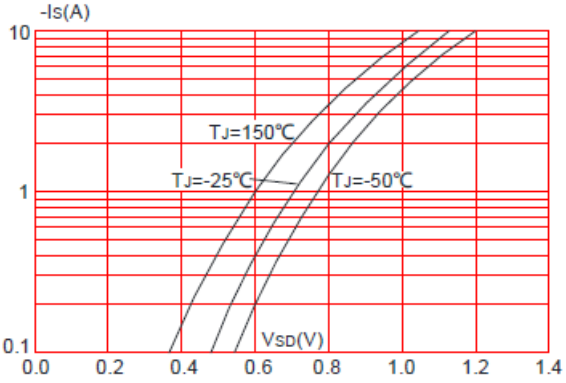


Figure 4. Body Diode Characteristics

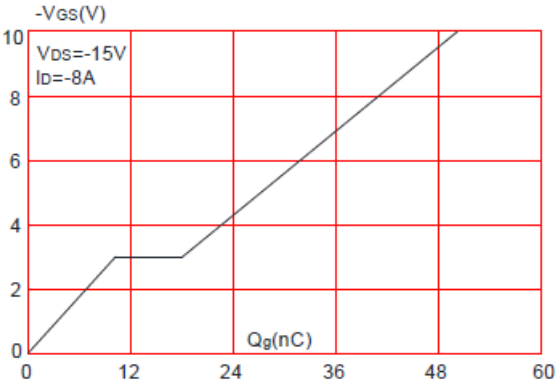


Figure 5. Gate Charge Characteristics

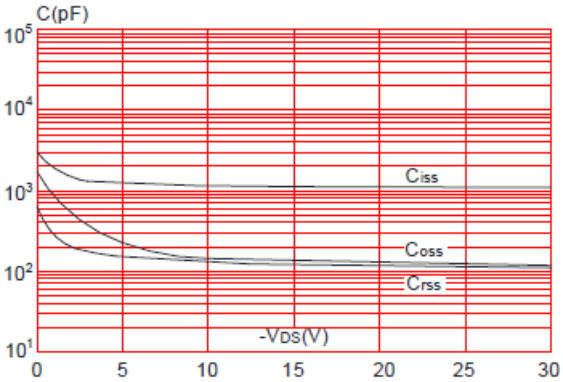


Figure 6. Capacitance Characteristics

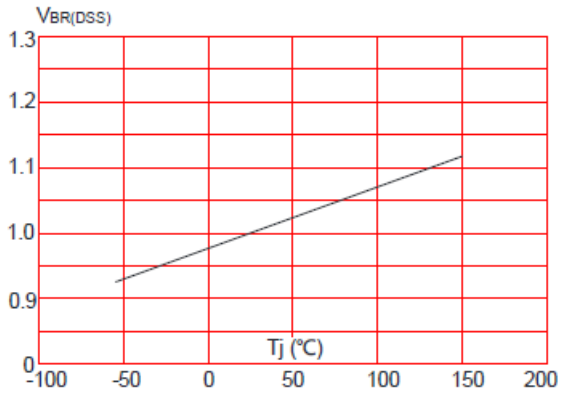


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

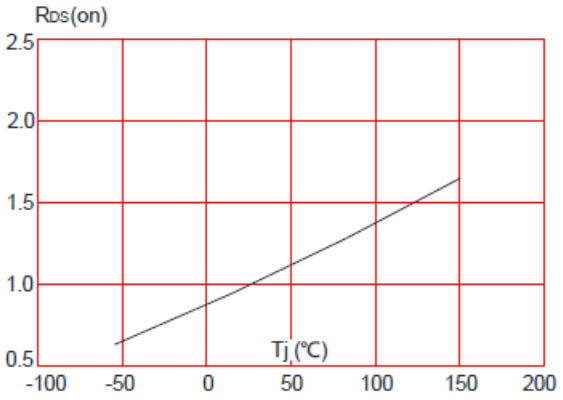


Figure 8. Normalized on Resistance vs. Junction Temperature

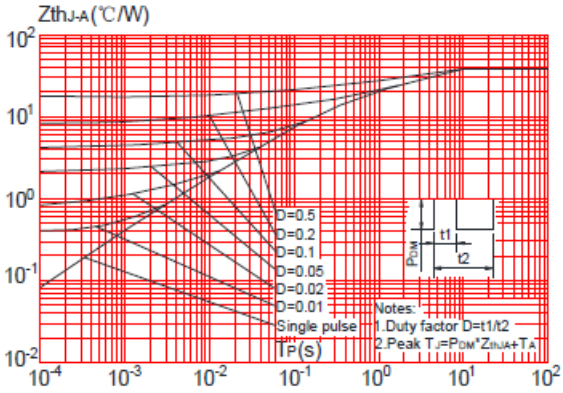


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

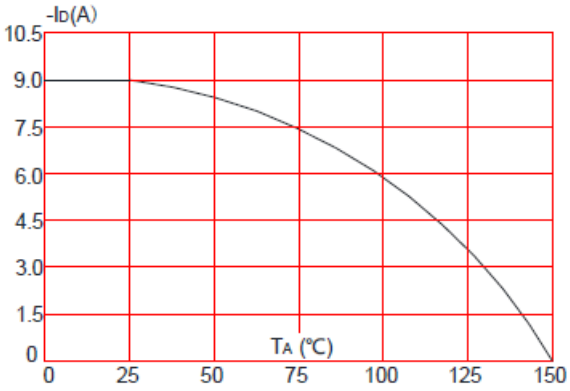


Figure 10. Maximum Continuous Drain Current vs. Ambient Temperature

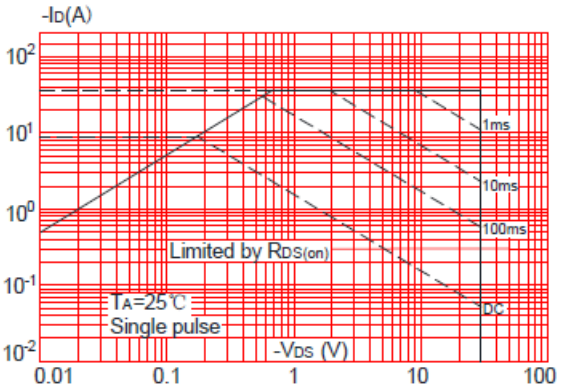
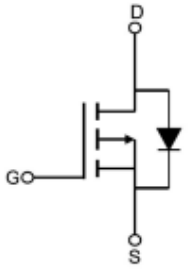
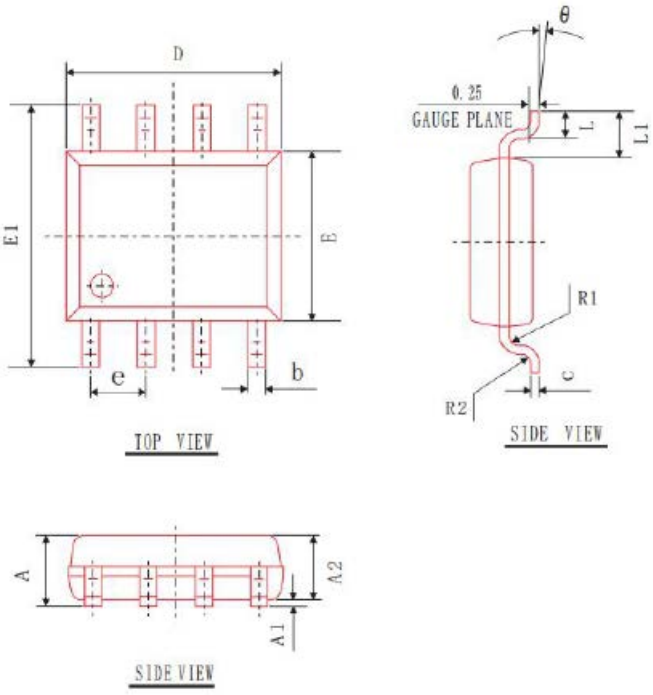


Figure 11. Maximum Safe Operating Area

・Circuit diagram



・Package outlines : Dimensions in (mm)



SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		

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