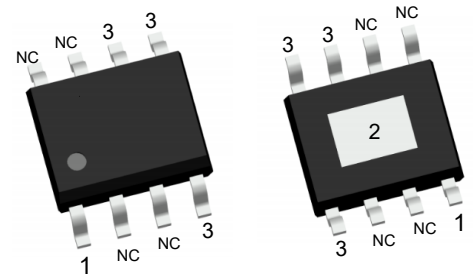


N-CHANNEL Power MOSFET

FEATURES

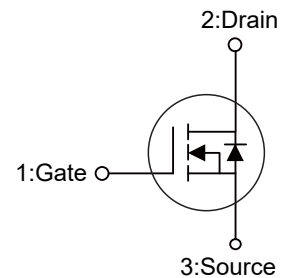
- V_{DS} : 500V Min, I_D : 3A
- $R_{DS(ON)}$: 4.0Ω (max.)@ $V_{GS}=10V$, $I_D=1.5A$
- High density cell design for ultra low on-resistance
- Fully characterized avalanche voltage and current



ESOP-8

MECHANICAL DATA

- Case: ESOP-8
- Case material: Molded Plastic. UL flammability 94V-0
- Weight: 0.33grams(approximate)
- Marking: 5N50E



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	500	V
Gate-source voltage	V_{GS}	± 30	V
Continuous drain current, $V_{GS}=10V$	I_D	3	A
Pulsed drain current (Note 1)	I_{DM}	11	A
Power dissipation	P_D	22	W
Thermal resistance from junction to ambient	$R_{\theta JA}$	110	C/W
Operating junction and storage temperature	T_J, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$
Single Pulsed Avalanche Energy (note 1)	E_{AS}	12	mJ
Lead Temperature for Soldering Purposes (1/8" from case for 10s)	T_L	260	$^\circ\text{C}$

Note: 1. E_{AS} condition: $V_{DD}=20V$, $L=0.5mH$, $R_G=25\Omega$, Starting $T_J = 25^\circ\text{C}$

N-CHANNEL Power MOSFET
ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Off characteristics						
Drain-Source breakdown voltage	V _{(BR)DS}	500			V	V _{GS} =0V, I _D =250μA
Zero gate voltage drain current	I _{DSS}			100	nA	V _{DS} =450V, V _{GS} =0V
Gate-body leakage current	I _{GSS}			±90	nA	V _{DS} =0V, V _{GS} =±32V
On characteristics (note1)						
Gate-threshold voltage	V _{GS(th)}	2.0	-	4.0	V	V _{DS} =V _{GS} , I _D =250μA
Drain-source on-resistance	R _{DS(ON)}		3.0	4.0	Ω	V _{GS} =10V, I _D =1.5A
Forward transconductance	g _{FS}		2.5		S	V _{DS} =15V, I _D =1.5A
Dynamic characteristics (Guaranteed by design, not subject to production)						
Input capacitance	C _{iss}		480		pF	V _{GS} =0V V _{DS} =25V f=1.0MHz
Output capacitance	C _{oss}		80		pF	
Reverse transfer capacitance	C _{rss}		15		pF	
Switching characteristics (Guaranteed by design, not subject to production)						
Turn-on delay time	t _{d(on)}		12		ns	V _{DD} =250V I _D =3 A R _G =25Ω V _{GS} =10V
Turn-on rise time	t _r		46		ns	
Turn-off delay time	t _{d(off)}		50		ns	
Turn-off fall time	t _f		48		ns	
Total gate charge	Q _g		12.8		nC	V _{DS} =400V, V _{GS} =5V I _D =3A
Gate-source charge	Q _{gs}		4		nC	
Gate-drain charge	Q _{gd}		4.5		nC	
Drain-source diode characteristics						
Diode forward voltage	V _{SD}			0.9	V	I _S =1A, V _{GS} =0V
Max. forward current	I _S			3	A	
Pulsed drain-source diode forward current	I _{SM}			11	A	

Notes: 1. Pulse Test: Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

N-CHANNEL Power MOSFET

TYPICAL CHARACTERISTICS

Figure 1. Typical Output Characteristics

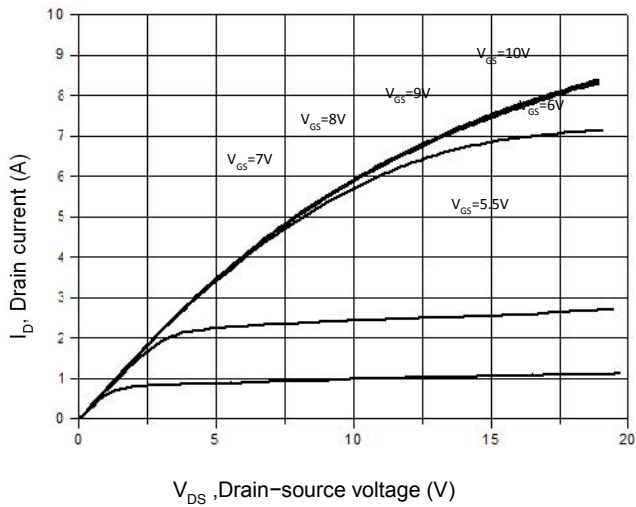


Figure 2. Transfer Characteristics

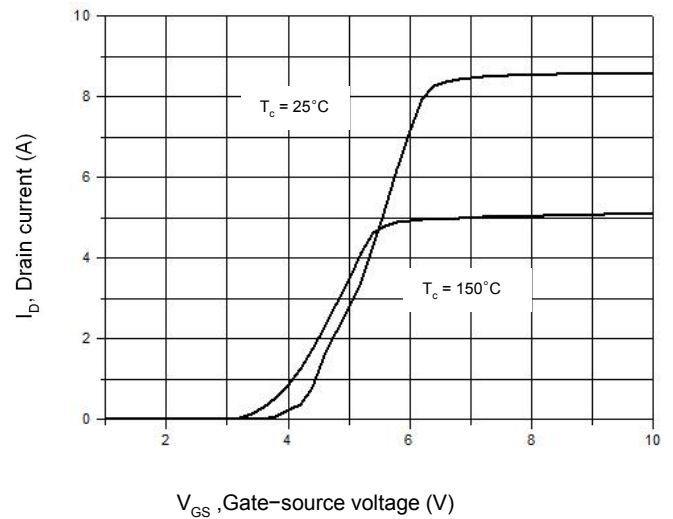


Figure 3. On-Resistance Variation vs. Drain Current

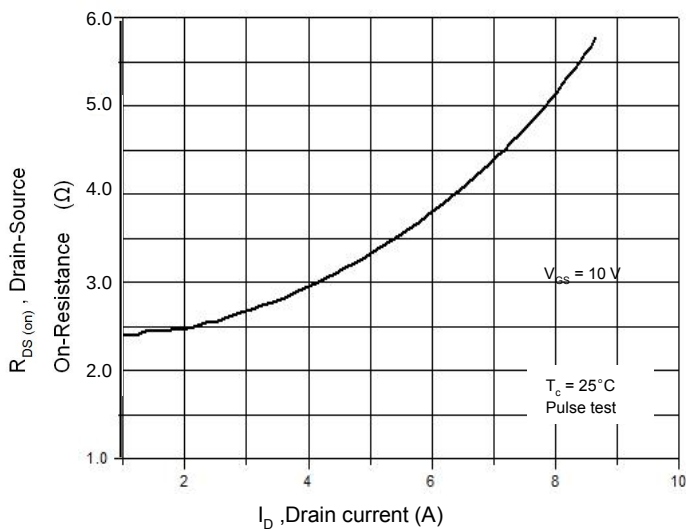


Figure 4. Threshold Voltage vs. Temperature

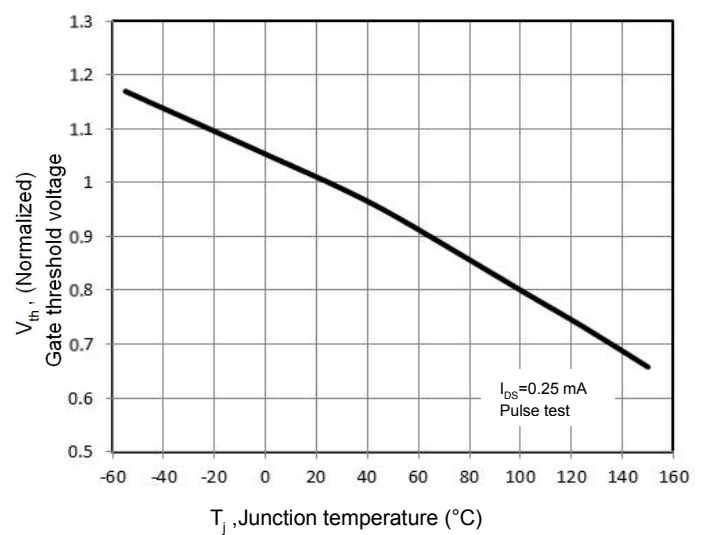


Figure 5. Breakdown Voltage vs. Temperature

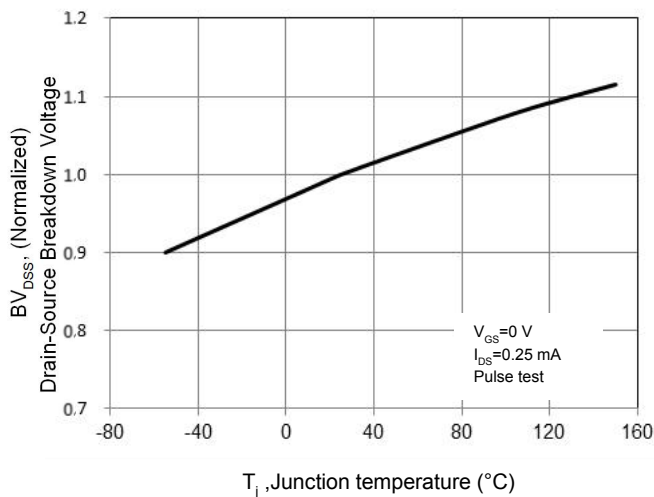
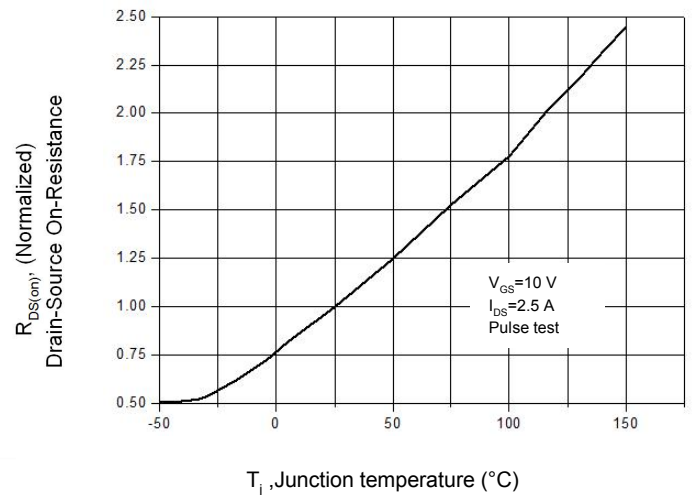


Figure 6. On-Resistance vs. Temperature



N-CHANNEL Power MOSFET

TYPICAL CHARACTERISTICS

Figure 7 . Continuous Drain Current vs. Temperature

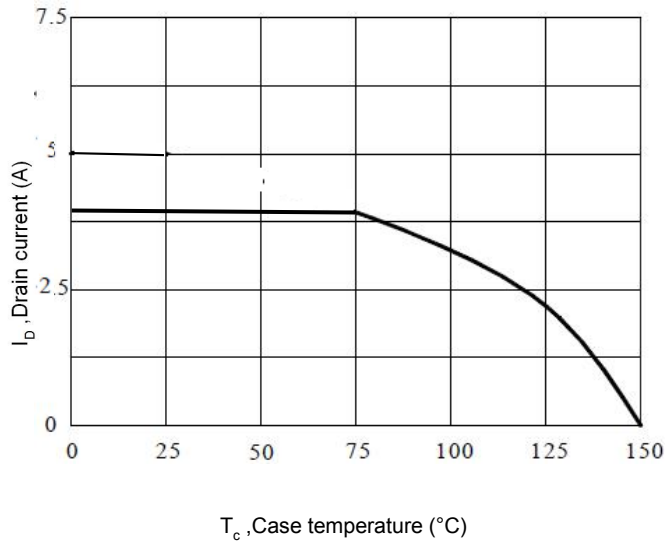


Figure 8 . Body Diode Transfer Characteristics

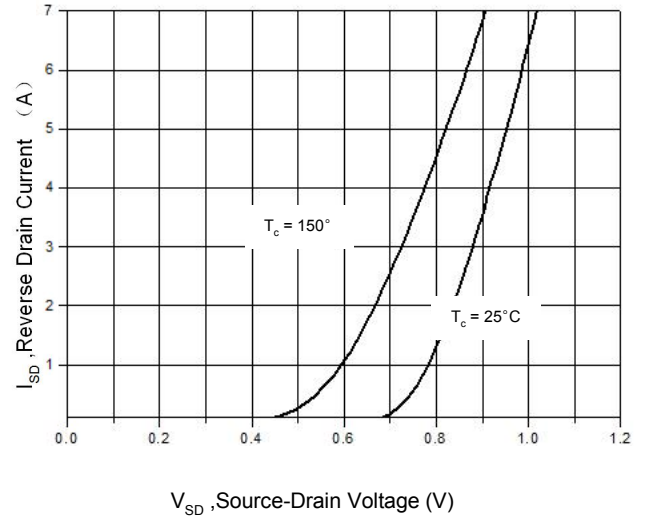
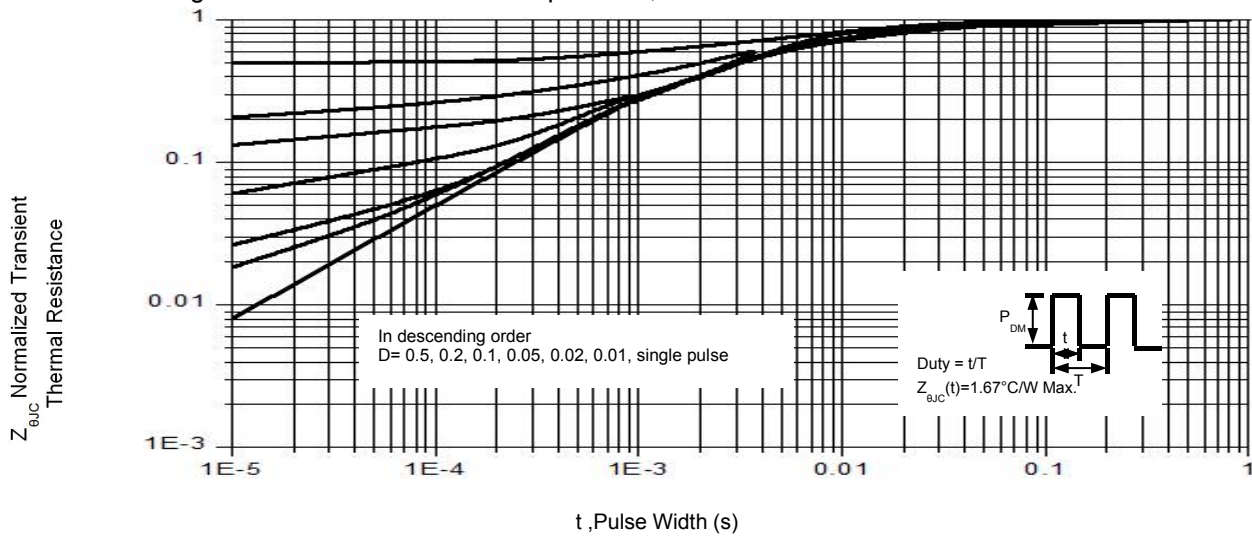


Figure 9 . Transient Thermal Impedance, Junction to Case



N-CHANNEL Power MOSFET

■ ESOP-8 PACKAGE OUTLINE DIMENSIONS

