



# 2SK3820

## N-Channel Power MOSFET 100V, 26A, 60mΩ, TO-263-2L

ON Semiconductor®

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### Features

- ON-resistance  $R_{DS(on)} = 45\text{m}\Omega$  (typ.)
- Input capacitance  $C_{iss} = 2150\text{pF}$  (typ.)
- 4V drive

### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		100	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		26	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	104	A
Allowable Power Dissipation	PD		1.65	W
		$T_c = 25^\circ\text{C}$	50	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		84.5	mJ
Avalanche Current *2	$I_{AV}$		26	A

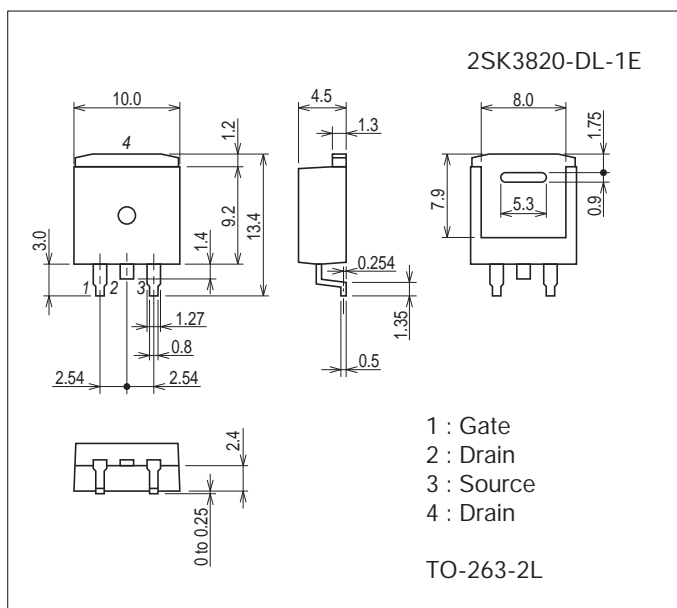
Note : \*1  $V_{DD} = 20\text{V}$ ,  $L = 200\mu\text{H}$ ,  $I_{AV} = 26\text{A}$  (Fig.1)\*2  $L \leq 200\mu\text{H}$ , single pulse

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### Package Dimensions

unit : mm (typ)

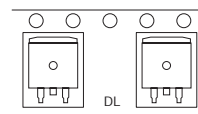
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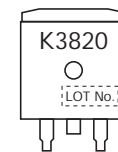
### Ordering & Package Information

Device	Package	Shipping	memo
2SK3820-DL-1E	TO-263-2L (SC-83, TO-263)	800pcs./reel	Pb Free

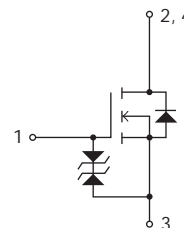
### Packing Type: DL



### Marking



### Electrical Connection

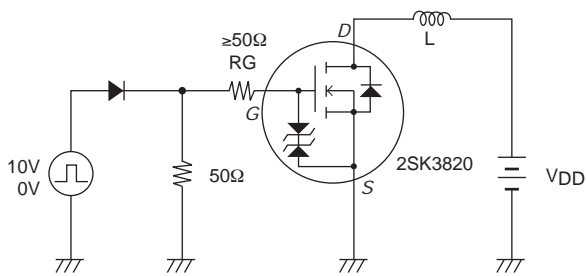


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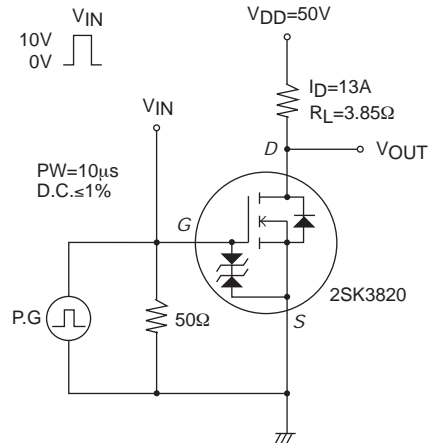
## Electrical Characteristics at Ta=25°C

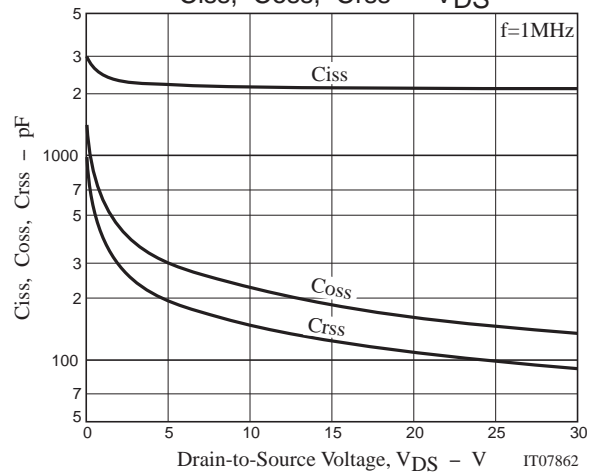
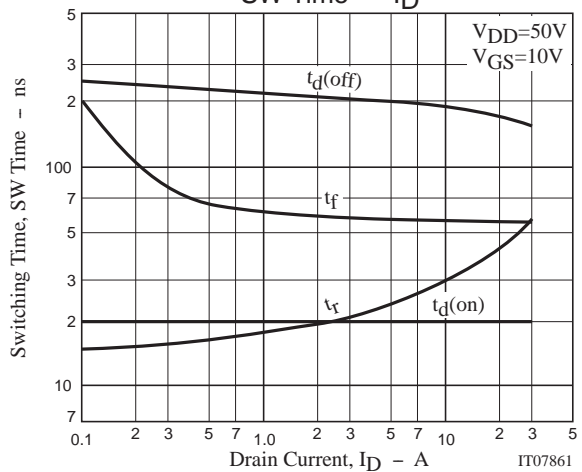
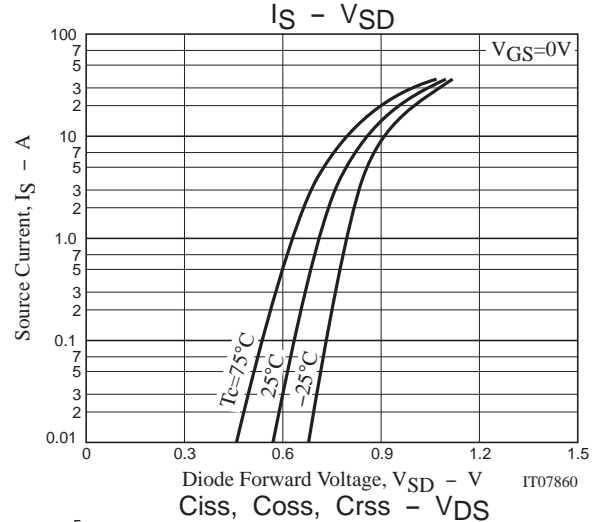
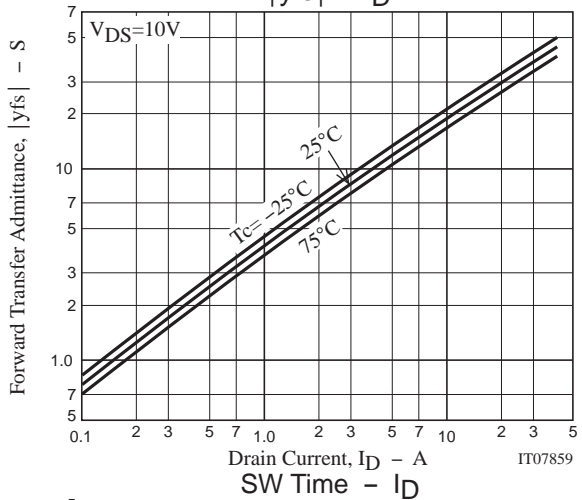
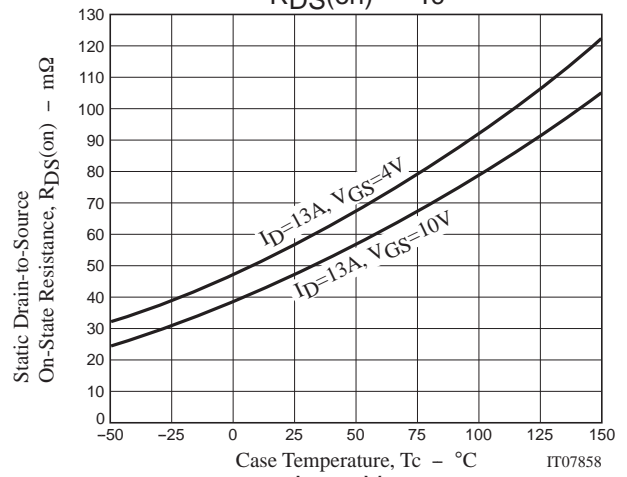
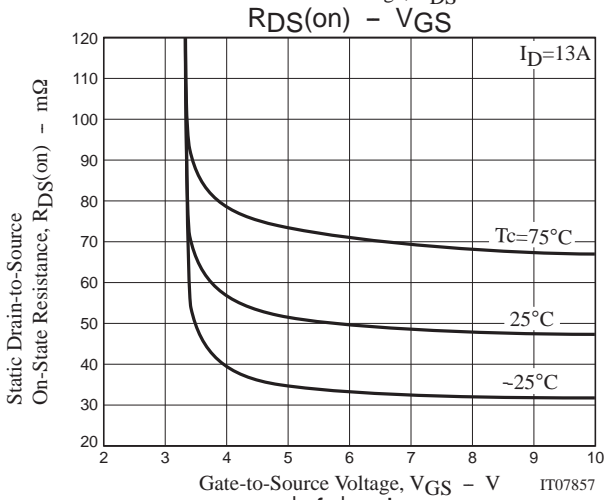
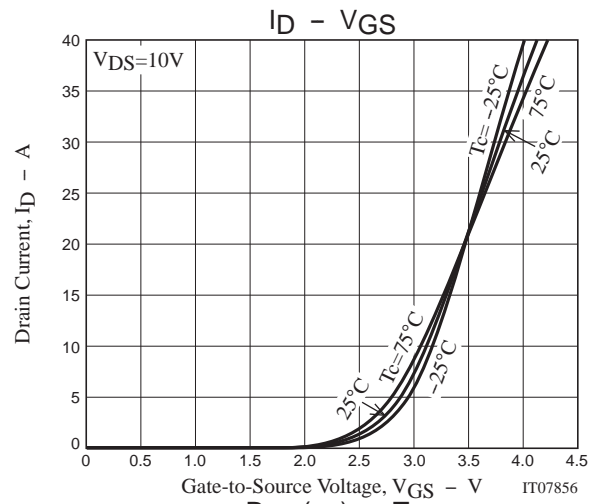
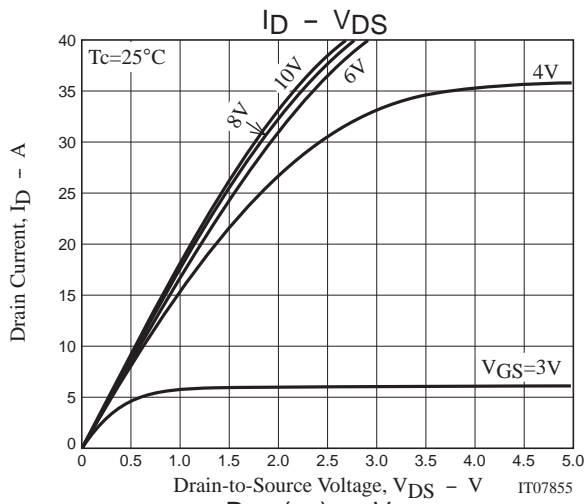
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V(BR)DSS	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	100			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.2		2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =13A	11	19		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =13A, V <sub>GS</sub> =10V		45	60	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =13A, V <sub>GS</sub> =4V		56	80	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, f=1MHz		2150		pF
Output Capacitance	C <sub>oss</sub>			160		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			110		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See Fig.2		20		ns
Rise Time	t <sub>r</sub>			34		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			185		ns
Fall Time	t <sub>f</sub>			62		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =26A		44		nC
Gate-to-Source Charge	Q <sub>gs</sub>			7.8		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>			9.8		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =26A, V <sub>GS</sub> =0V		1.0	1.2	V

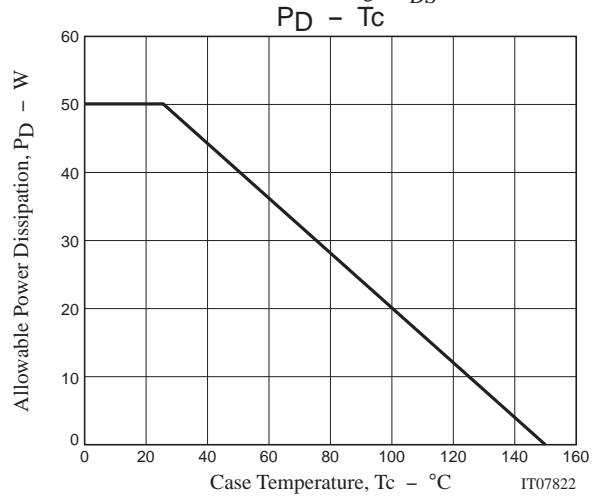
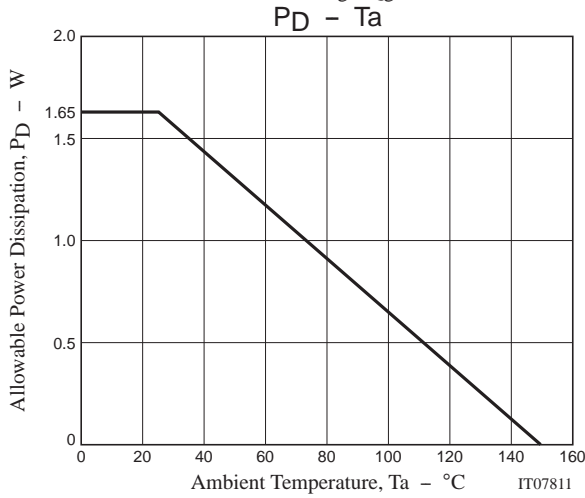
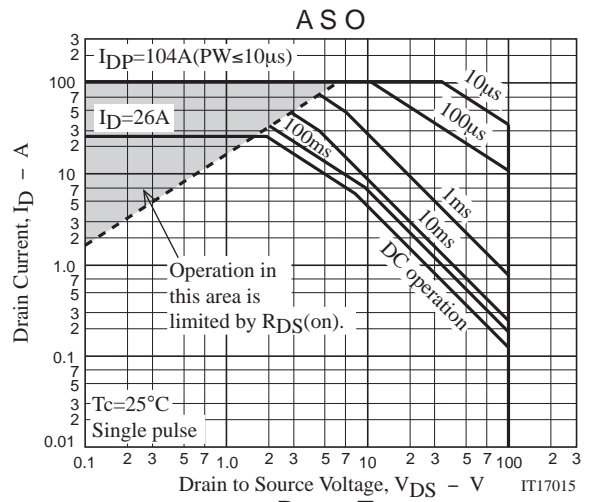
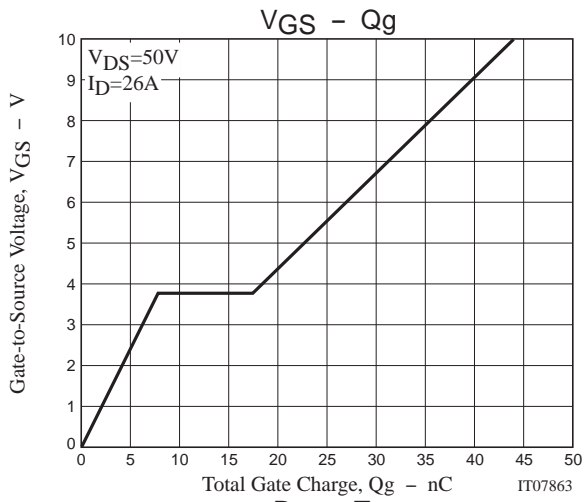
**Fig.1 Unclamped Inductive Switching Test Circuit**



**Fig.2 Switching Time Test Circuit**



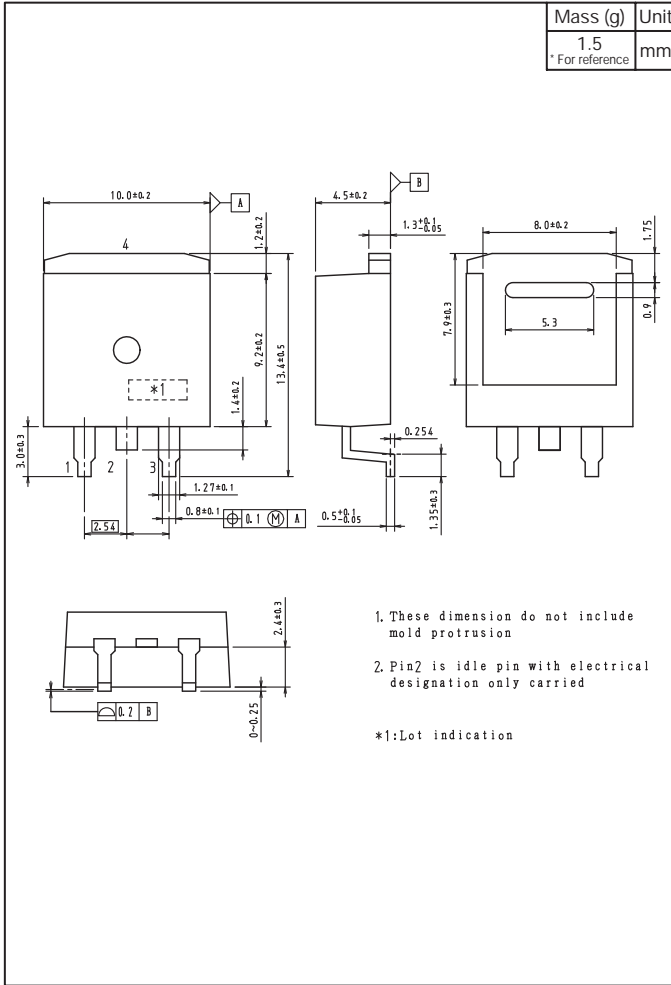




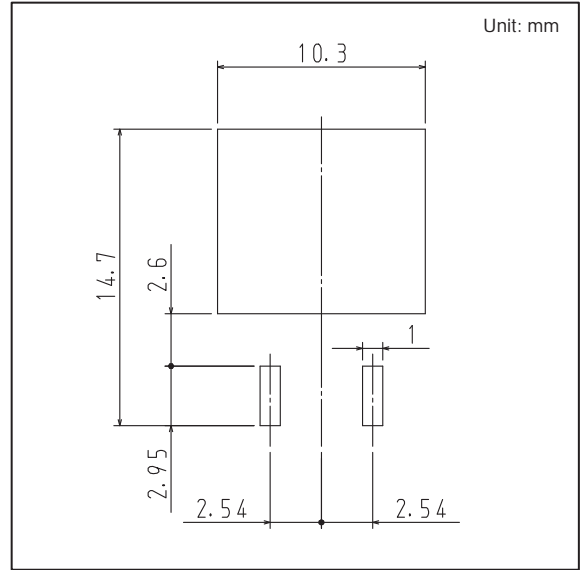
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## Outline Drawing

2SK3820-DL-1E



## Land Pattern Example



Note on usage : Since the 2SK3820 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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