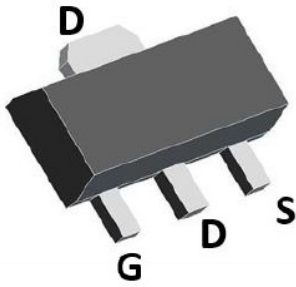
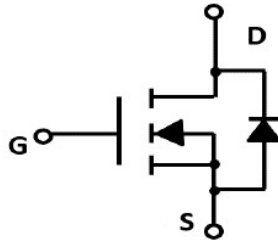
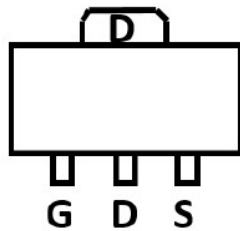


N-Channel Enhancement Mode Field Effect Transistor


SOT-89


Product Summary

- V_{DS} 40V
- I_D 20A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) < 85 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 110 mohm

General Description

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

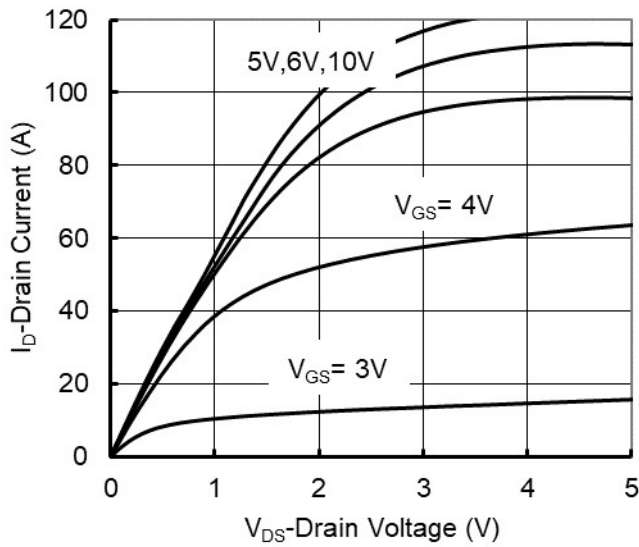
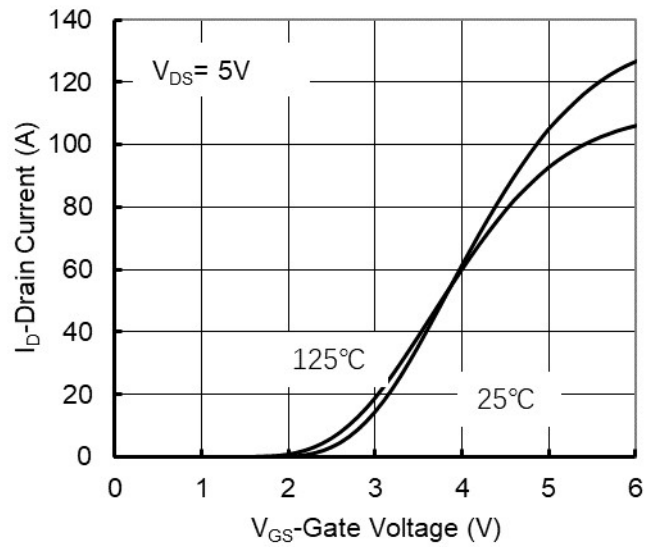
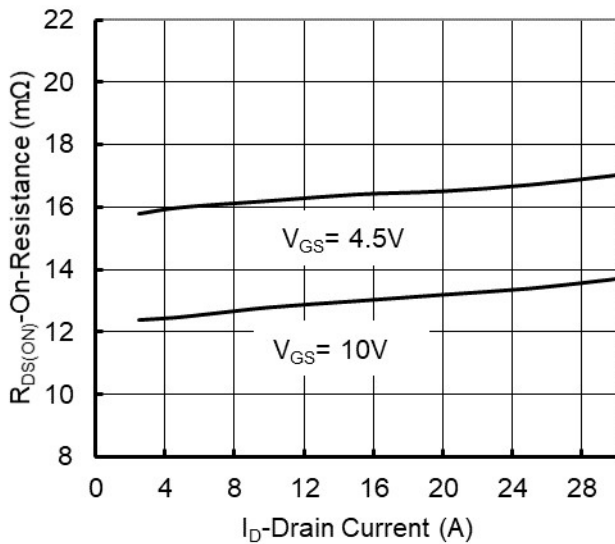
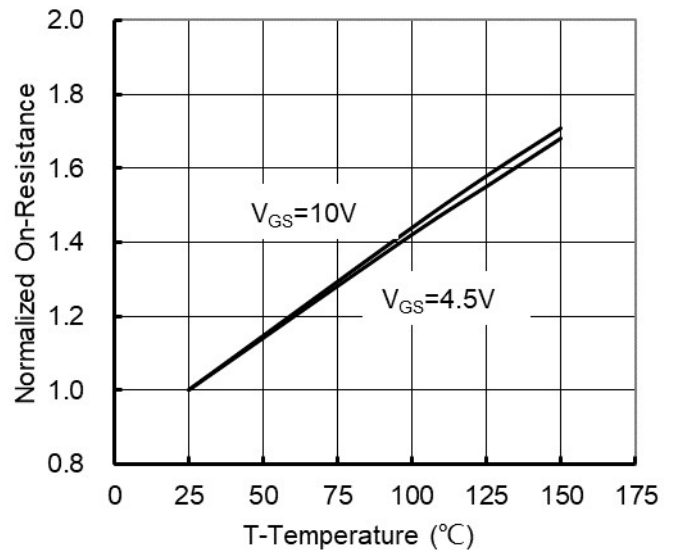
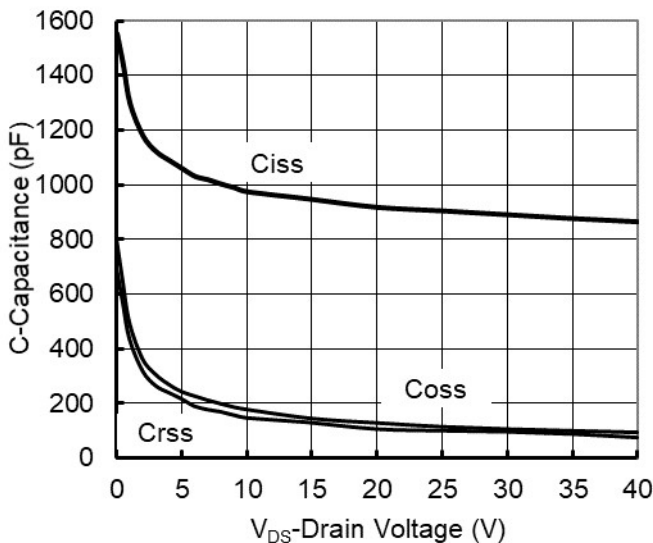
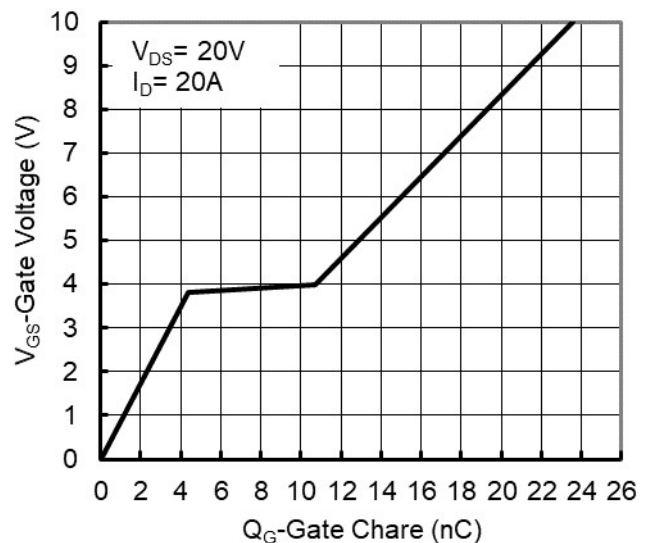
Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	40	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	20	A
Pulsed Drain Current ^A	I_{DM}	20	A
Total Power Dissipation @ $T_c=25^\circ\text{C}$	P_D	1.2	W
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	105	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS1}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
	I _{GSS2}	V _{GS} = ±10V, V _{DS} =0V			±50	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.8	1.2	2.2	V
Static Drain-Source On-Resistance	R _{Ds(ON)}	V _{GS} = 10V, I _D =5A		32	45	mΩ
		V _{GS} = 4.5V, I _D =4A		40	58	
Diode Forward Voltage	V _{SD}	I _S =3.6A, V _{GS} =0V		0.8	1.2	V
Maximum Body-Diode Continuous Current	I _S				10	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHZ		900		pF
Output Capacitance	C _{oss}			125		
Reverse Transfer Capacitance	C _{rss}			108		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =20V, I _D =10A		23.3		nC
Gate-Source Charge	Q _{gs}			4.5		
Gate-Drain Charge	Q _{gd}			6.5		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =2A, R _L =1Ω R _{GEN} =3Ω		10		ns
Turn-on Rise Time	t _r			55		
Turn-off Delay Time	t _{D(off)}			28		
Turn-off fall Time	t _f			72		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ Typical Performance Characteristics

Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

Figure 3. On-Resistance vs. Drain Current and Gate Voltage

Figure 4. On-Resistance vs. Junction Temperature

Figure 5. Capacitance Characteristics

Figure 6. Gate Charge

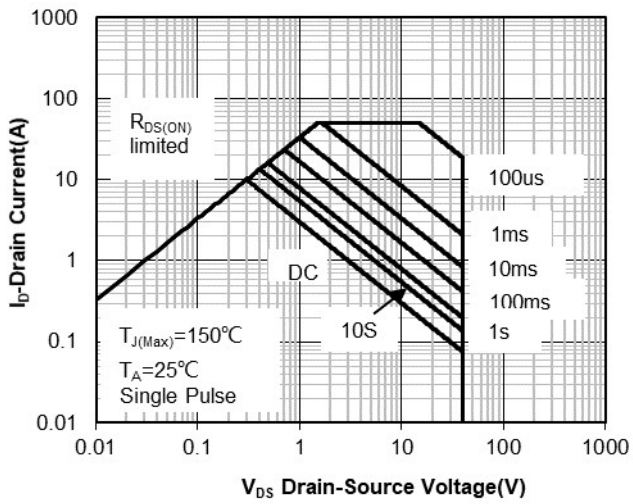


Figure 7. Safe Operation Area

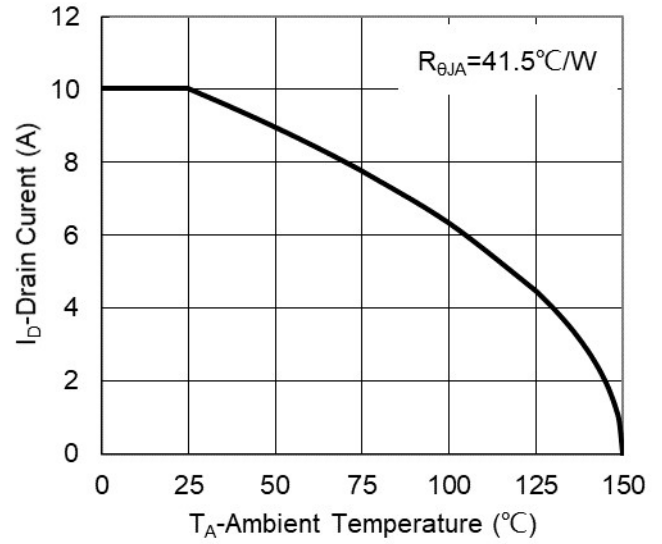
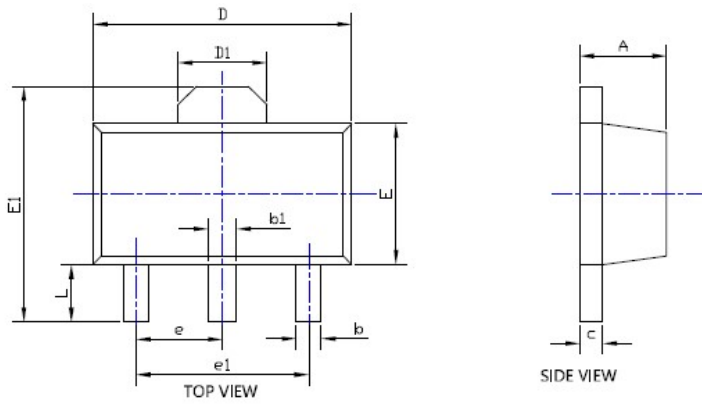
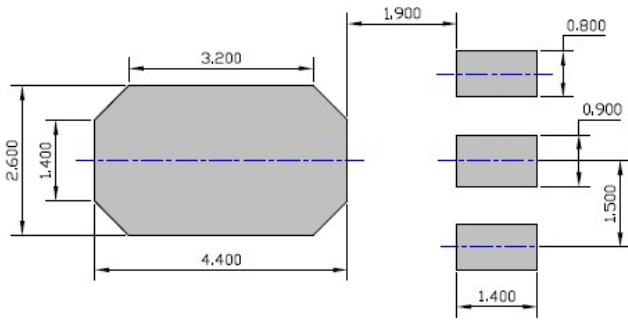


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

■ SOT-89 Package Information


SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0,055	0,059	0,063	1,400	1,500	1,600
b	0,014	---	0,020	0,350	---	0,520
b1	0,016	---	0,023	0,400	---	0,580
c	0,014	---	0,017	0,350	---	0,440
D	0,173	0,177	0,181	4,400	4,500	4,600
D1	0,061REF			1,550REF		
E	0,093	0,096	0,100	2,350	2,450	2,550
E1	0,155	---	0,167	3,940	---	4,250
e	0,059TYP			1,500TYP		
e1	0,118TYP			3,000TYP		
L	0,035	0,039	0,043	0,900	1,000	1,100



SUGGESTED SOLDER PAD LAYOUT

UNIT: mm

NOTE:

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
2. TOLERANCE 0,1mm UNLESS OTHERWISE SPECIFIED.
3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.